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January 24, 2002

VIA OVERNIGHT COURIER

Mr. Bernard Schorle (HSRL-6)
Waste Management Division
U. S. EPA Region V
77 West Jackson Blvd.
Chicago, IL 60604

Subject: ***Report of Water Quality Conditions, Third Quarter 2001***
Marion (Bragg) Landfill, Marion, Indiana

Dear Mr. Schorle:

On behalf of the Marion (Bragg) Group, please find enclosed three (3) copies of the Report of Water Quality Conditions for the third quarter of 2001, prepared by O&M, Inc., for the subject site.

Please contact me at (630) 443-1940 with any questions on the enclosed reports.

Sincerely,
de maximis, inc.

Gary E. Parker

Enclosures

cc: Resa Ramsey, IDEM (cover plus one copy)
John Hanson, Esq., Beveridge & Diamond, P.C. (cover plus one copy)
Rick Meyers, United Technologies (cover plus one copy)
Dan Garrigan, O&M Inc. (cover via facsimile only)

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REPORT OF

WATER QUALITY CONDITIONS
THIRD QUARTER 2001
MARION (BRAGG) LANDFILL

MARION, INDIANA

Prepared on Behalf of:

MARION (BRAGG) LANDFILL GROUP

Prepared by:

O & M, Inc.
105 Commerce Drive
Suite B
Danville, IN 46122

DECEMBER 2001

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1.0 INTRODUCTION

This report presents water level data, field water quality measurements and results of laboratory analyses for water samples collected at the Marion (Bragg) Landfill site during the semi-annual monitoring event conducted in September 2001. The monitoring program was designed to document the effectiveness of the landfill cap and is described in detail in the Remedial Action Plan (RAP) (Environmental Resources Management (ERM), 1989, Remedial Action Plan, Marion (Bragg) Landfill Site, Marion, Indiana) and Remedial Design/Remedial Action (RD/RA) Work Plan (Environmental Resources Management, 1989, Remedial Design/Remedial Action Work Plan, Marion (Bragg) Landfill Site, Marion, Indiana).

This sampling event continues to implement a condensed monitoring program after the U.S. Environmental Protection Agency (USEPA) issued a no-further-action Record of Decision for this site. Over Ten (10) years of monitoring data had been collected, since the start of the monitoring program in January 1990, and reviewed as part of the ROD preparation.

With concurrence of the USEPA, the number of sampling locations and parameters has been reduced. Monitoring has been reduced to the following locations: for ground water, MB-1, MB-2, MB-5, MB-6, MB-7, MB-8, MB-9, and MB-10, and for surface water, PW-1, SW-1, SW-5, and SW-6.

The sampling program consisted of sampling the on-site monitoring wells (MB-1, -2, and -5 through -10), the on-site pond (PW-1), the Mississinewa River (SW-1 and SW-5), and Lugar Creek (SW-6) for the Target Compound List (TCL) semi-volatiles, Target Analyte List (TAL) metals (dissolved fraction), and the project specific indicator parameters, total suspended solids (TSS), ammonia-nitrogen (NH_3-N), chemical oxygen demand (COD), and chlorides (Cl). Selected locations of MB-1, MB-2, and SW-1 are

sampled for Target Compound List (TCL) volatiles. These parameters and locations are sampled two (2) times per year.

Water quality sampling at the Marion (Bragg) Landfill for the referenced period was performed on September19th and 20th, 2001. All sampling and analyses were conducted in compliance with the requirements specified in the RD/RA Work Plan (ERM, 1989) and Quality Assurance Project Plan (ERM, 1990, Quality Assurance Project Plan, Remedial Design/Remedial Action, Monitoring and Additional Studies at the Marion (Bragg) Landfill Site, Marion, Indiana).

Copies of the chain-of-custody forms are included in Appendix A and the data validation report is included in Appendix B. Questions regarding specific analytes, concentrations, or qualifiers are addressed in the data validation report.

2.0 SITE CONDITIONS

Sampling event data is presented in attached Tables 1 through 12 and Figures 1 through 7. Review of that data indicates:

- The interpreted groundwater flow directions are the same as presented in previous reports.

- The water levels in wells, ponds, and river continue to follow seasonal trends (Figures 4 to 7). The elevation of the river was lower than the elevations of the onsite pond during this event.

- No methane was detected at any site monitoring locations.

- Calculated concentrations of un-ionized ammonia exceeded the chronic aquatic criteria (CAC) in groundwater samples at downgradient locations, MB-2, MB-6, MB-7, and MB-8. (Table 10). However, after applying the mixing calculation, the concentrations were evaluated as being below the CAC (Table 12).

- No TCL volatiles exceeded water quality criteria for the September sampling event.

- The TAL metals, arsenic and iron were detected in groundwater samples from on-site monitoring wells MB-1, MB-2, MB-5, MB-6, MB-7, MB-8 and MB-9 at concentrations which exceeded the appropriate water quality criteria. However, after applying the mixing calculation, the concentrations dropped below the criteria (Table 12).

3.0 COMMENTS

The following general comments are provided regarding sampling procedures, sample documentation, and the data validation report:

- The data validator noted that matrix spike and matrix spike duplicate (MS/MSD) samples should not be recorded on the COC forms as separate samples, but that extra sample volume should be obtained for the analysis. The sample numbering procedures specified in the Quality Assurance Project Plan (QAPP) calls for the use of a suffix added to distinguish additional sample volumes obtained for MS/MSD analysis. This procedure has been used for all sampling events to date and has proven satisfactory. O&M, Inc. will continue to follow the sample numbering and COC procedures specified in the QAPP until instructed otherwise.

FIGURES

Figure 1
Site Location
Marion (Bragg) Landfill

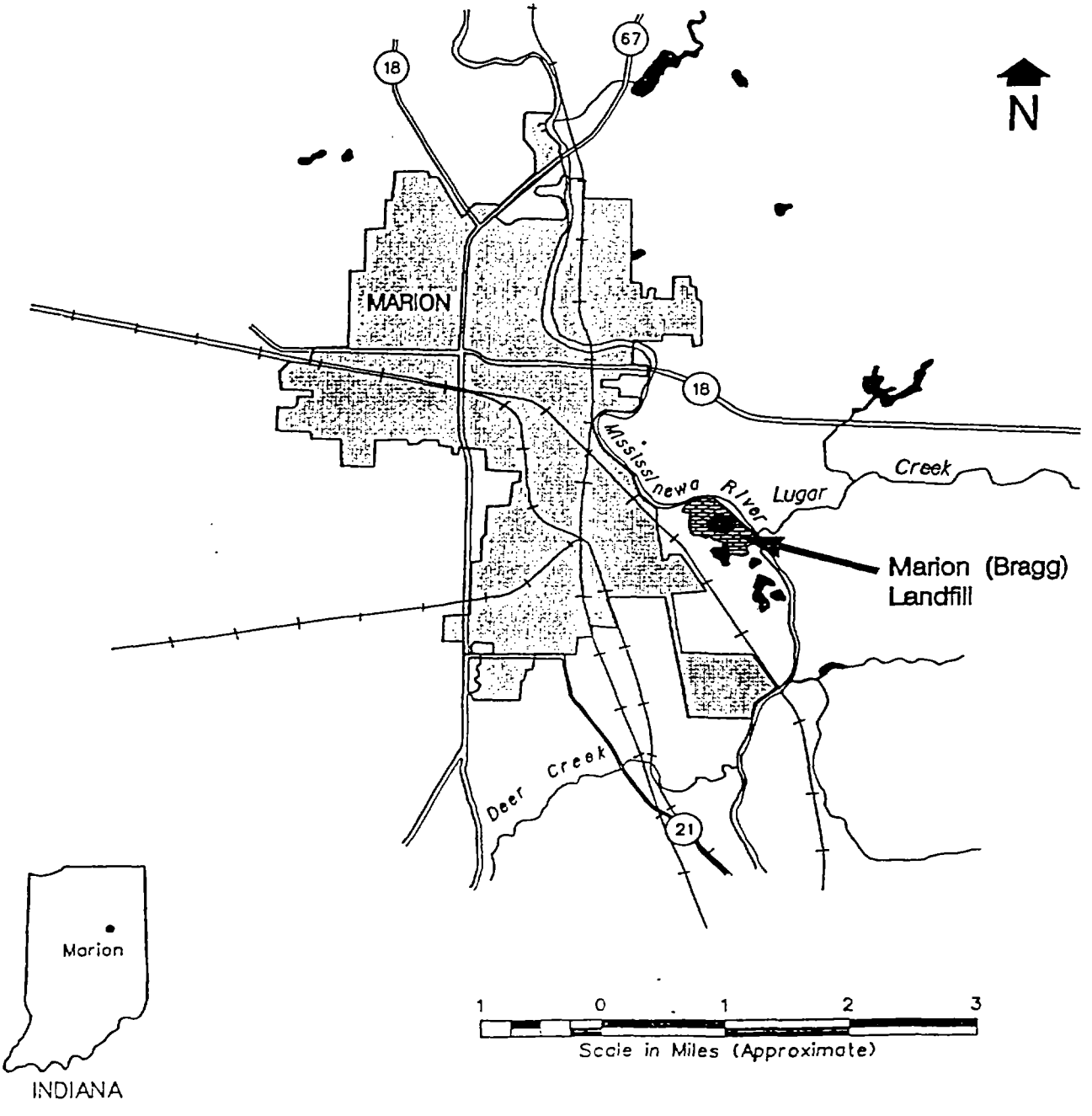


Figure 2
Sampling Locations
Marion (Bragg) Landfill

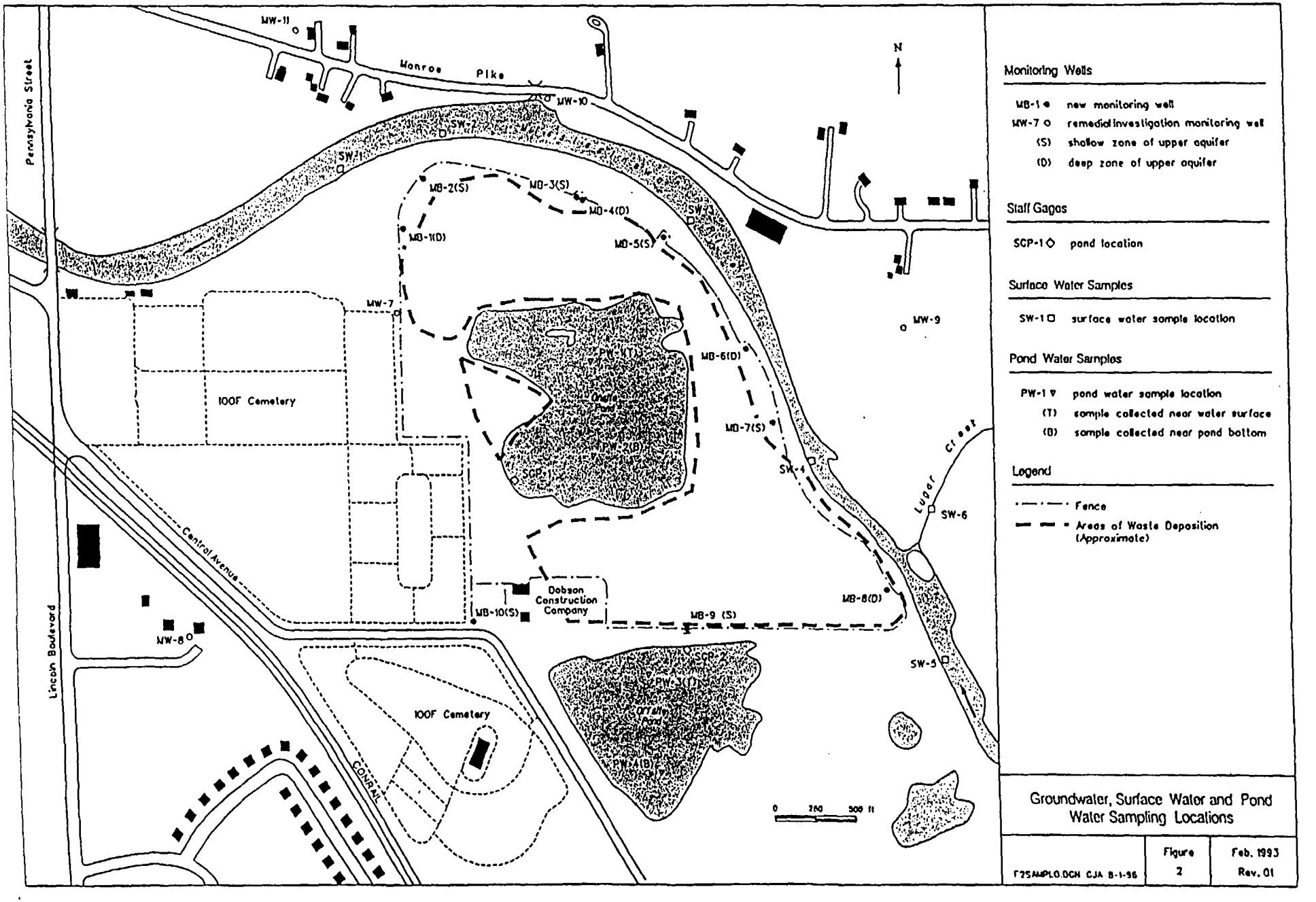


Figure 3
Groundwater Contour Map
Marion (Bragg) Landfill

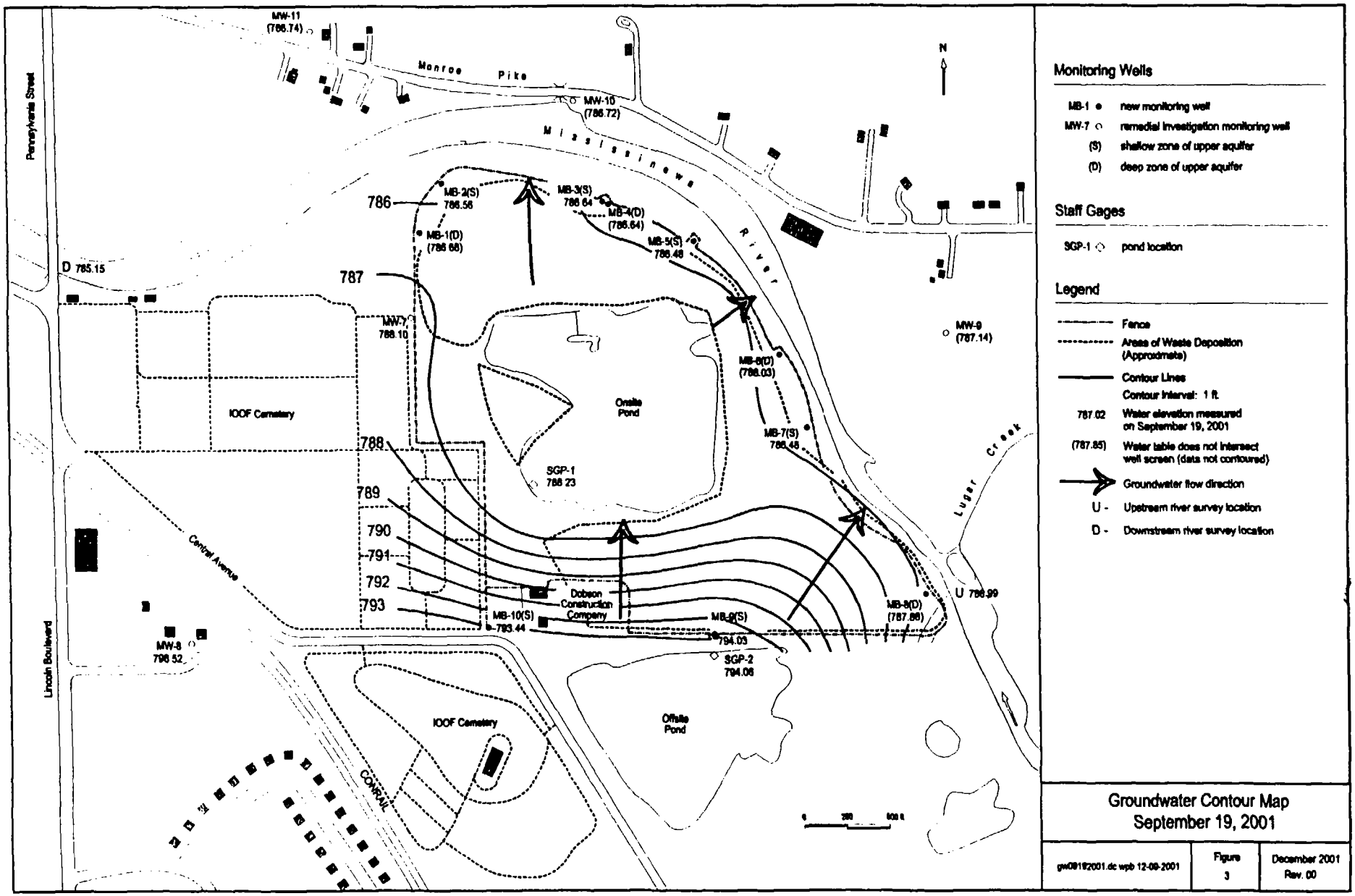


Figure 4. Hydrograph for
Off-site Monitoring Wells

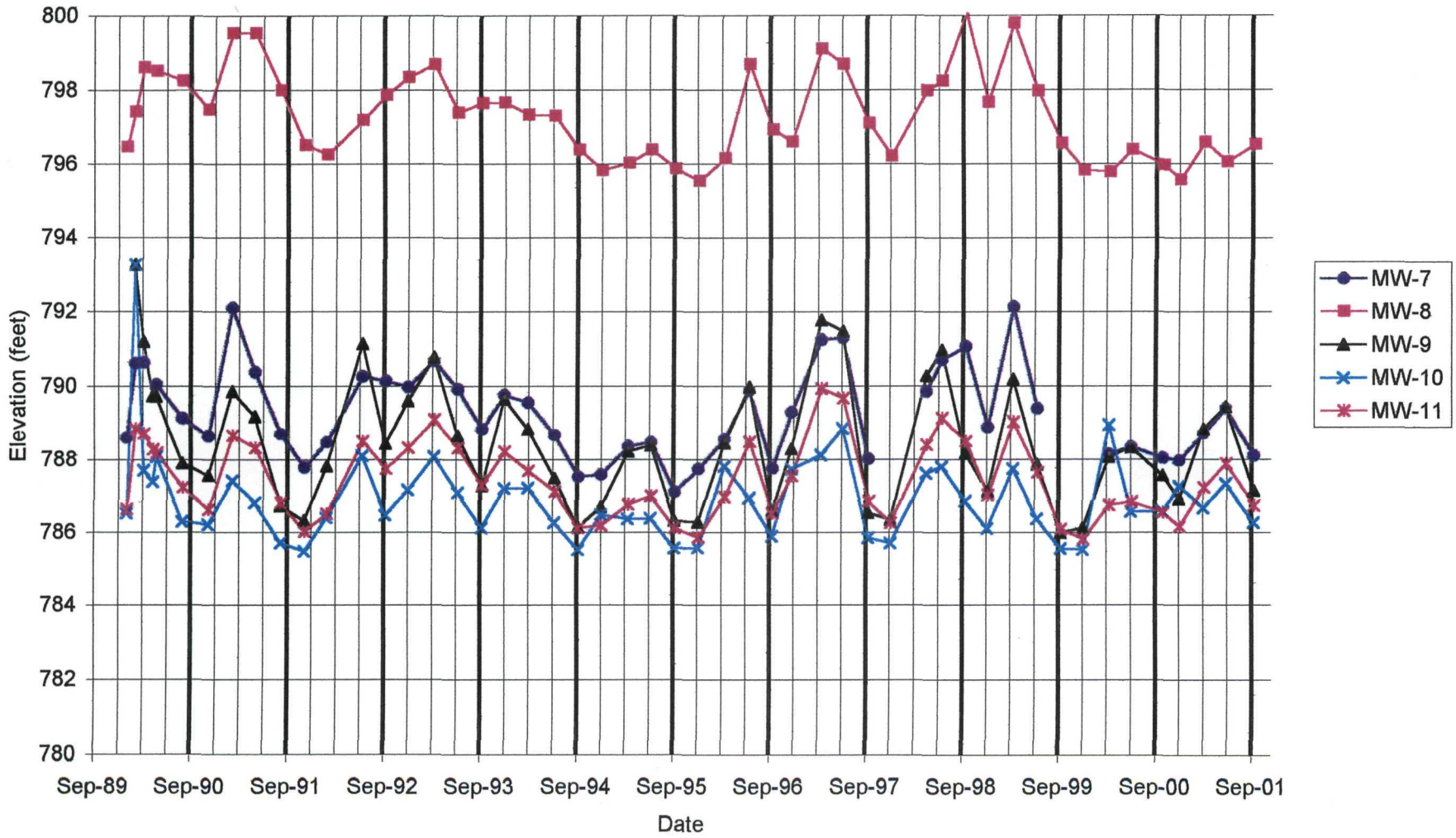


Figure 5. Hydrograph for Shallow, Upper Aquifer Monitoring Wells

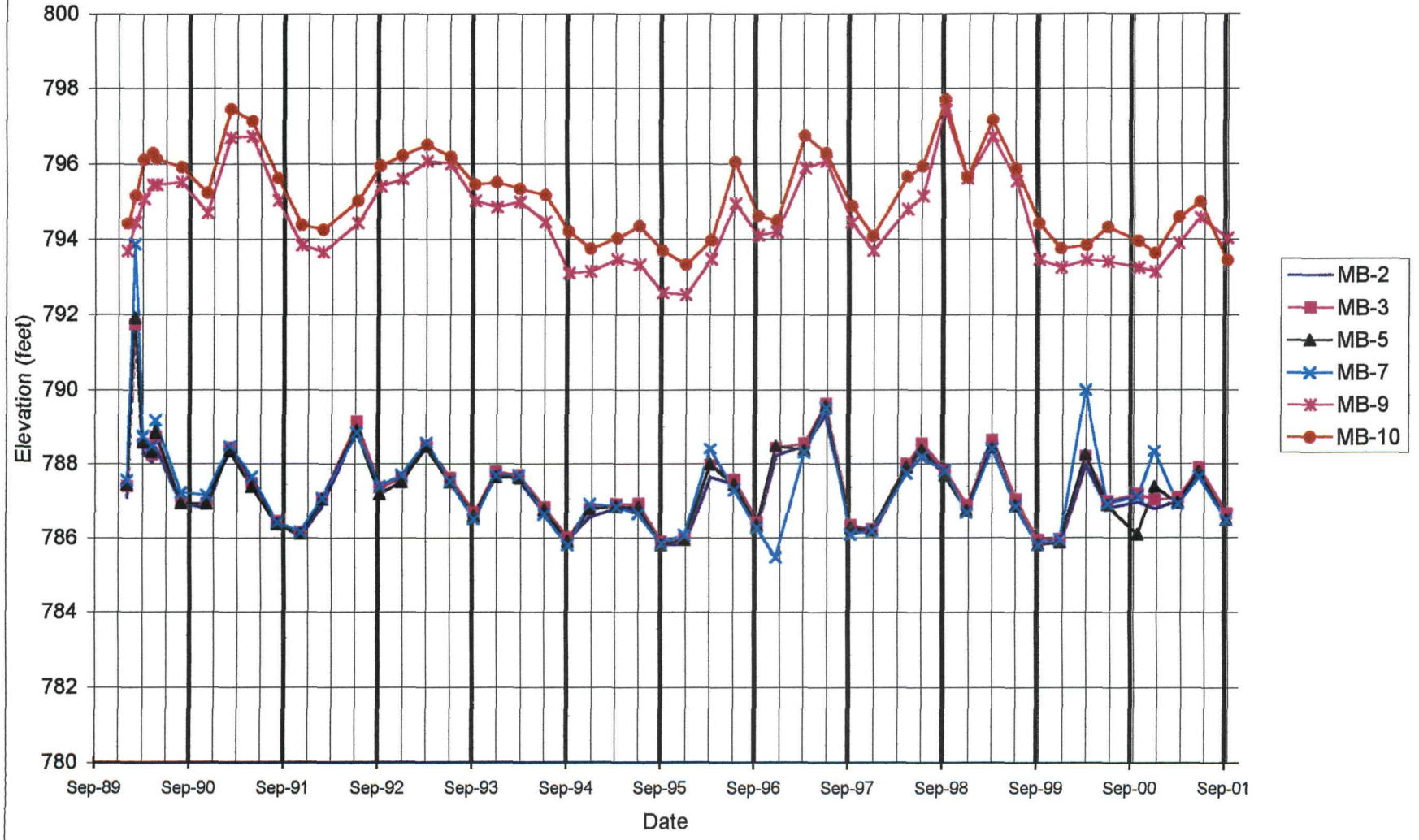


Figure 6. Hydrograph for Deep,
Upper Aquifer Monitoring Wells

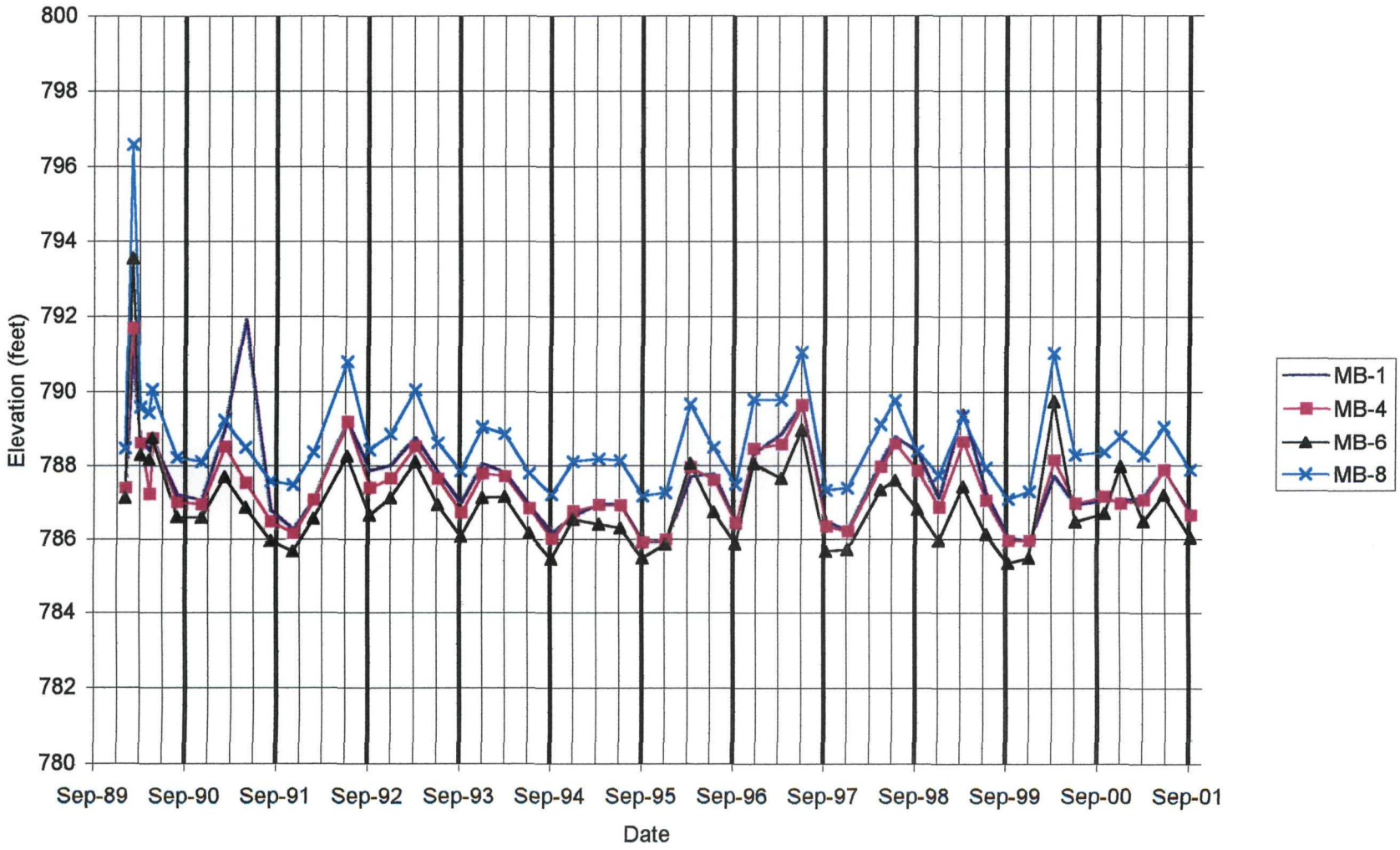
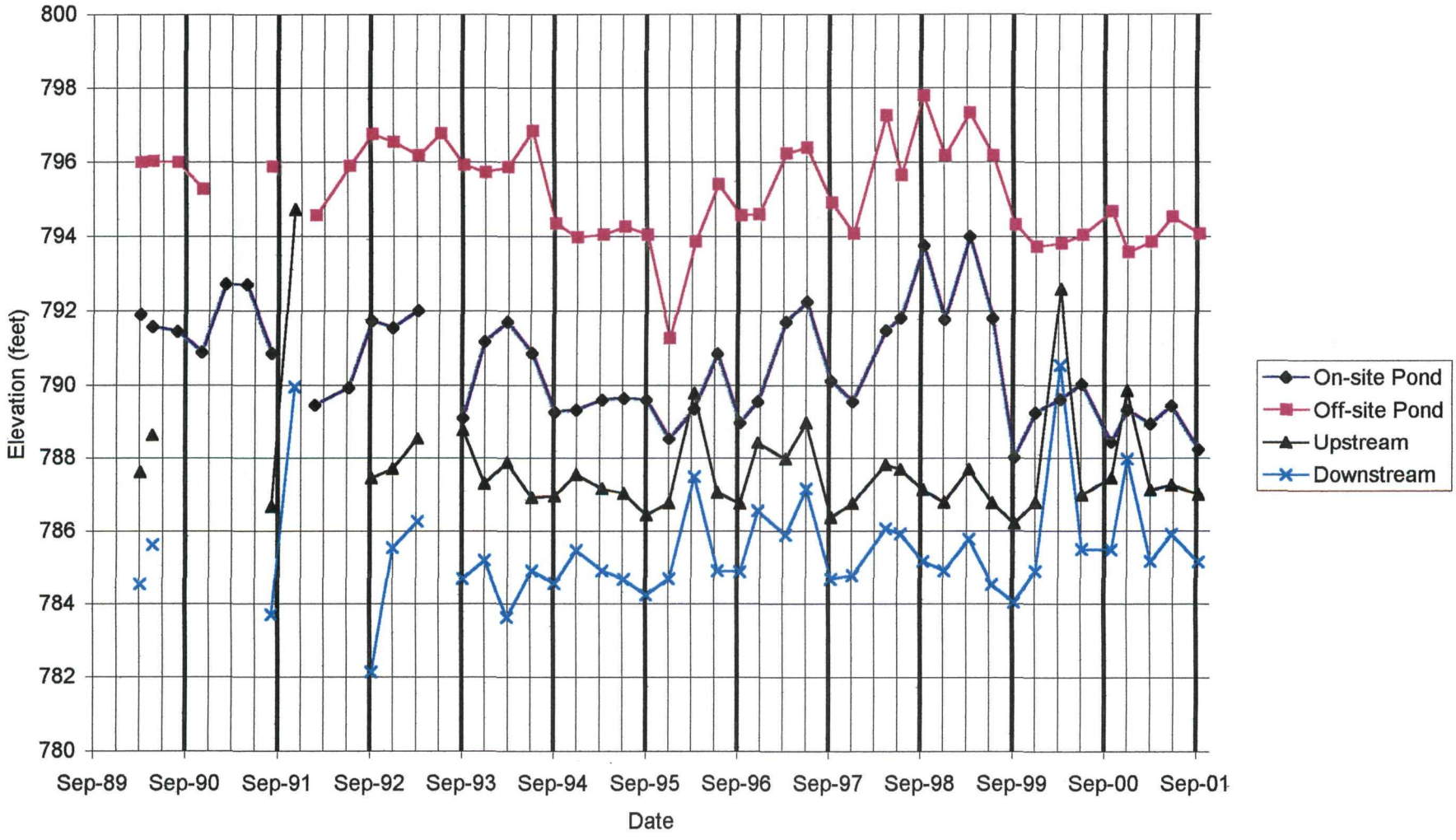


Figure 7. Hydrograph for
Surface Water Locations



TABLES

Table 1
SAMPLE SUMMARY MATRIX - MARION (BRAGG) LANDFILL

Matrix	Number of Samples	Number of Trip Blanks*	Number of Field Blanks*	Number of Field Duplicates	Number of Matrix Spike/ Matrix Spike Duplicate Samples **	Total Matrix	Analyses	Container and Preservation	Holding Times
							LABORATORY		
GROUND WATER (Initial and semiannual sampling. Confirmatory samples shall be taken during the quarter following the sampling event that revealed the presence of a parameter requiring such confirmatory sampling. Sampling is anticipated for 30 years.)	8 (Note 1)	2	1	1	2	12	TCL Volatiles	2-40 ml screw cap vials w/ Teflon-lined septa. HCl to pH < 2. Cool to 4 C.	14 days
							pH Check	1-40 ml screw cap vials w/ Teflon-lined septa. HCl to pH < 2. Cool to 4 C.	28 days
							TCL BNAs	2-1 liter amber glass w/ Teflon lined enclosure. Cool to 4 C.	7 days until extraction, 40 days after extraction.
							Dissolved TAL Metals	Dissolved samples will be field filtered through a 0.45 micron filter prior to preservation. 1-liter plastic HNO3 to pH <2. Cool to 4C.	
							TSS, Chloride	1-liter plastic, Cool to 4C	3 days (TSS) 28 days (Cl)
							NH3-N	1-500 ml plastic H2SO4 to pH <2. Cool to 4C.	28 days
							COD	1-250 ml plastic H2SO4 to pH <2. Cool to 4C	28 days
							FIELD		
							pH, Conductivity D.O. and Temp.	Measure in field to stability before collection.	In field.

Note 1: Wells MB-3 and MB-4 were not sampled this quarter as part of an interim reduced monitored program following a "No further action" ROD.

* - Trip blanks are required for volatile organic analysis at a frequency of one per cooler shipped containing volatile organic analysis.

** - Triple the volume for groundwater and surface water locations will be collected for matrix spike/matrix spike duplicate analyses at a frequency of one per 20 investigative samples. Inorganic analyses will include a single matrix spike and a laboratory duplicate vs. matrix spike duplicate.

Table 1 - Continued

SAMPLE SUMMARY MATRIX - MARION (BRAGG) LANDFILL

Matrix	Number of Samples	Number of Trip Blanks*	Number of Field Blanks*	Number of Field Duplicates	Number of Matrix Spike/ Matrix Spike Duplicate Samples **	Total Matrix	Analyses	Container and Preservation	Holding Times
							LABORATORY		
SURFACE WATER (Initial and semiannual sampling. Confirmatory samples shall be taken during the quarter following the sampling event that revealed the presence of a parameter requiring such confirmatory sampling. Sampling is anticipated for 30 years.)	4 (Note 1)	2	1	1	2	8	TCL Volatiles	2-40 ml screw cap vials w/ Teflon-lined septa. HCl to pH < 2. Cool to 4 C.	14 days
							pH Check	1-40 ml screw cap vials w/ Teflon-lined septa. HCl to pH < 2. Cool to 4 C.	28 days
							TCL BNAs	2-1 liter amber glass w/ Teflon lined enclosure. Cool to 4 C.	7 days until extraction, 40 days after extraction.
							Dissolved TAL Metals	Dissolved samples will be field filtered through a 0.45 micron filter prior to preservation. 1-liter plastic HNO3 to pH <2. Cool to 4C.	
							TSS, Chloride	1-liter plastic, Cool to 4C	3 days (TSS) 28 days (Cl)
							NH3-N	1-500 ml plastic H2SO4 to pH <2. Cool to 4C.	28 days
							COD	1-250 ml plastic H2SO4 to pH <2. Cool to 4C.	28 days
							FIELD		
							pH, Conductivity D.O. and Temp.	Measure in field to stability before collection.	In field.

Note 1: The on-site pond location of PW-2, off-site pond locations of PW-3 and PW-4, and river locations of SW-2, -3, and -4 were not sampled this quarter as part of an interim reduced monitored program following a "No further action" ROD.

* - Trip blanks are required for volatile organic analysis at a frequency of one per cooler shipped containing volatile organic analysis.

** - Triple the volume for groundwater and surface water locations will be collected for matrix spike/matrix spike duplicate analyses at a frequency of one per 20 investigative samples. Inorganic analyses will include a single matrix spike and a laboratory duplicate vs matrix spike duplicate.

TABLE 2: WATER LEVEL AND METHANE MONITORING DATA, MARION (BRAGG) LANDFILL, SEPTEMBER 19, 2001

Monitoring Location	Top of Casing Elevation (ftamsl)	Stickup (ft)	Ground Surface Elevation (ftamsl)	Methane Concentration (%)	Water Level (ftbtoc)	Water Elevation (ftamsl)
MB-1	799.57	2.50	797.07	0.0	12.89	786.68
MB-2	801.75	2.80	798.95	0.0	15.19	786.56
MB-3	806.15	2.70	803.45	0.0	19.51	786.64
MB-4	805.96	2.60	803.36	0.0	19.32	786.64
MB-5	806.67	3.00	803.67	0.0	20.39	786.48
MB-6	803.58	3.50	800.08	0.0	17.55	786.03
MB-7	812.73	3.00	809.66	0.0	26.25	786.48
MB-8	810.73	3.00	807.73	0.0	22.85	787.88
MB-9	814.73	2.80	811.93	0.0	20.70	794.03
MB-10	822.35	3.10	819.25	0.0	28.91	793.44
MW-7	802.36	2.82	799.54	0.0	14.26	788.10
MW-8	810.87	3.08	807.79	NM	14.35	796.52
MW-9	806.04	2.57	803.47	NM	18.90	787.14
MW-10	803.17	2.27	800.90	NM	16.90	786.27
MW-11	811.09	2.83	808.26	NM	24.35	786.74
Staff Gauges	**Top of Staff Gauge Elevation**				**Distance Below Top of Staff Gauge (1)**	
SGP-1 (4)	792.92	NA	NA	NM	4.69	788.23
SGP-2	798.16	NA	NA	NM	4.10	794.06
River Elevation	**Benchmark Elevation**				**Surveyed Distance**	
Upstream location (2)	810.73	NA	NA	NM	23.74	786.99
Downstream location (3)	796.94	NA	NA	NM	11.79	785.15

Notes:

Stickup - Measured distance between the ground surface and the top of casing

ftamsl - feet above mean sea level

ftbtoc - feet below top of casing. For staff gauges, valve presented is measurement (in feet) below level of staff gauge.

(1) Pond water level measured from surveyed top of staff gauge down to pond water.

(2) Elevations determined by surveying to known benchmark elevations; benchmark for upstream location MB-8 top of casing.

(3) Elevations determined by surveying to known benchmark elevations, benchmark for downstream location is concrete spillway on east side of McFeeley Bridge.

(4) On-site pond staff reinstalled and resurveyed by O&M on 12/14/1999 using MB-10 top of well casing for benchmark elevation.

SGP-1 - On-Site Pond

SGP-2 - Off-Site Pond

NM - Not Measured; only the shallow wells are monitored for methane.

NA - Not Applicable

TABLE 3: FIELD WATER QUALITY MEASUREMENTS CONDUCTED DURING WELL PURGING, SEPTEMBER 2001

Well I.D.	Total Depth (ft)	Approx Stickup (ft)	Depth to Water (ftbtoc)	Casing Volume (gal)		Date	Volume Pumped (gal)	pH	Temp (C)	Specific Conductance (umhos/cm) (1)	Specific Conductance (umhos/cm) (2)	Dissolved Oxygen (mg/L)	Conversion Factor (K)
MB-1	37	2.50	12.89	3.91	*	09/19/01							
					#	09/20/01	12.0	7.5	16.0	650	793	1.7	1.00
							12.5	7.0	15.0	650	813	1.6	1.00
							13.0	7.2	15.0	650	813	1.6	1.00
MB-2	18	2.80	15.19	0.46	*	09/19/01							
					#	09/20/01	1.5	6.7	17.0	800	952	1.8	1.00
							2.0	6.6	17.0	810	964	1.5	1.00
							2.5	6.8	17.0	810	964	1.6	1.00
							3.0	6.8	16.5	850	1024	1.6	1.00
							3.5	6.8	16.0	800	976	1.7	1.00
MB-3	24	2.70	NA	NA	*		(Well removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.)						
MB-4	35	2.60	NA	NA	*		(Well removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.)						
MB-5	24	3.00	20.39	0.58	*	09/19/01							
					#	09/20/01	2.0	6.9	15.5	850	1049	6.5	1.00
							2.5	6.7	15.5	820	1012	6.3	1.00
							3.0	6.7	15.0	800	1000	6.6	1.00
MB-6	28	3.50	17.55	1.69	*	09/19/01							
					#	09/20/01	5.0	6.7	15.0	770	963	2.0	1.00
							5.5	6.6	15.0	720	900	1.5	1.00
							6.0	6.5	15.0	720	900	1.6	1.00
							6.5	6.6	15.0	750	938	1.6	1.00
MB-7	32	3.0	26.25	0.93	*	09/19/01							
					#	09/20/01	3.0	6.7	15.0	720	900	2.2	1.00
							3.5	6.8	15.5	780	963	2.2	1.00
							4.0	7.0	16.0	750	915	1.8	1.00
							4.5	7.0	16.0	720	878	1.8	1.00
							5.0	7.1	16.0	760	927	1.7	1.00
MB-8	36	3.0	22.85	2.13	*	09/19/01							
					#	09/20/01	6.5	7.5	15.0	950	1188	1.6	1.00
							7.0	7.2	15.0	950	1188	1.3	1.00
							7.5	7.1	15.0	950	1188	1.3	1.00
							8.0	7.3	15.5	950	1173	1.3	1.00

TABLE 3: FIELD WATER QUALITY MEASUREMENTS CONDUCTED DURING WELL PURGING, SEPTEMBER 2001

Well I.D.	Total Depth (ft)	Approx Stickup (ft)	Depth to Water (ftbtoc)	Casing Volume (gal)	Date	Volume Pumped (gal)	pH	Temp (C)	Specific Conductance (umhos/cm) (1)	Specific Conductance (umhos/cm) (2)	Dissolved Oxygen (mg/L)	Conversion Factor (K)
MB-9	29	2.80	20.70	1.34	* 09/19/01							
					# 09/19/01	4.0	7.4	16.0	400	488	2.2	1.00
						4.5	7.3	16.0	400	488	2.2	1.00
						5.0	7.3	16.0	400	488	2.3	1.00
MB-10	30	3.10	28.91	0.18	* 09/19/01							
					# 09/19/01	0.5	7.0	14.5	650	823	6.0	1.00
						1.0	7.2	15.0	650	813	6.2	1.00
						1.5	7.0	15.0	600	750	6.2	1.00

Notes:
NA - Not Applicable
set below top of case
/een the ground surface and the top of casing
* -Monitoring date
# - Sampling date
(1) - Field measured conductivity.
(2) - Specific conductance value corrected to 25 C and adjusted using conversion factor (K).

Table 4

Data Qualifier Definitions

Qualifier	Description
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value represents its approximate concentration
UJ	The analyte was not detected about the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table 5
Marion (Bragg) Landfill
Sample Designation Key
Third Quarter 2001 Sampling Event
September 2001

Sample Designation	Sample Location	Parameters	Date Collected
Ground Water			
GW01CJ	MB-10	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/19/01
GW02CJ	MB-9	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/19/01
GW03CJ	MB-5	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/20/01
GW04CJ	MB-6	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/20/01
GW05CJ	MB-7	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/20/01
GW06CJ	MB-8	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/20/01
GW07CJ	MB-2	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01

Table 5 Continued

Sample Designation	Sample Location	Parameters	Date Collected
GW08CJ	MB-1	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01
GW08DPCJ	MB-1	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01
GW08MSCJ	MB-1	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01
GW08MSDCJ	MB-1	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01
GW09FBCJ	Field Blank	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/20/01
GW10TBCJ	Trip Blank	VOCs	09/20/01
Pond Water			
PW01CJ	PW-1 (On-site shallow)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/19/01

Table 5 Continued

Sample Designation	Sample Location	Parameters	Date Collected
River Water			
SW01CJ	SW-1 (Downstream)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/19/01
SW01DPCJ	SW-1 (Downstream)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/19/01
SW01MSCJ	SW-1 (Downstream)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/19/01
SW01MSDCJ	SW-1 (Downstream)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, VOCs, SVOCs	09/19/01
SW02CJ	SW-5 (Upstream)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/19/01
SW03CJ	SW-6 (Lugar Creek)	TSS, Cl^-, COD, NH_3-N, Dissolved metals, SVOCs	09/19/01
SW04TBCJ	Trip Blank	VOCs	09/19/01

Table 6: GROUNDWATER CHEMISTRY DATA, SEPTEMBER 2001

MONITORING WELL LOCATION IN AQUIFER	MB-1 BOTTOM	MB-2 TOP	MB-5 TOP	MB-6 BOTTOM	MB-7 TOP	MB-8 BOTTOM	MB-9 TOP	MB-10 TOP	DUPLICATE (MB-1)
TCL VOLATILES (ug/L)									
Acetone	10 UJ	10 U	NA	NA	NA	NA	NA	NA	10 UJ
Benzene	10 U	10 U	NA	NA	NA	NA	NA	NA	10 U
Chlorobenzene	10 U	10 U	NA	NA	NA	NA	NA	NA	10 U
Total 1,2-Dichloroethene	10 U	10 U	NA	NA	NA	NA	NA	NA	10 U
Trichloroethene	R	10 U	NA	NA	NA	NA	NA	NA	R
Vinyl Chloride	10 U	10 U	NA	NA	NA	NA	NA	NA	10 U
VOLATILE TENTATIVELY IDENTITFIED COMPOUNDS (Retention Time) (1)									
None detected									
TCL SEMIVOLATILES (ug/L)									
bis(2-Ethylhexyl)phthalate	10 U	1 J	10 U	9 U	10 U	1 J	10 U	1 J	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	9 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	25 U	25 UJ	24 U	23 UJ	25 U	25 U	25 U	24 U	26 UJ
SEMIVOLATILE TENTATIVELY IDENTIFIED COMPOUNDS (Retention Time) (1)									
Unknown		12 J		28 J		129 J	2 U		
2(3H)-Benzothiazolone				8 NJ					
Trichloropropene						4 J	5 J		
4,4'-(1-Methylethylidene)bis phenol				2 NJ					
coeluting substituted aromatics						14 J			
Phthalic Anhydride						5 NJ			
1,4,5,6,7,7-hexachloro-bicyclo(2-2-1)hept-5-ene-2,3-dicarboxylic acid						11 NJ			
Hexadecanoic Acid		2 NJ							
Sulfur		10 NJ							

Table 6: GROUNDWATER CHEMISTRY DATA, SEPTEMBER 2001

MONITORING WELL LOCATION IN AQUIFER	MB-1 BOTTOM	MB-2 TOP	MB-5 TOP	MB-6 BOTTOM	MB-7 TOP	MB-8 BOTTOM	MB-9 TOP	MB-10 TOP	DUPLICATE (2) (MB-1)
DISSOLVED TAL METALS (ug/L)									
Aluminium	43.6 U	43.6 U	90.0	43.6 U	43.6 U	43.6 U	43.6 U	43.6 U	43.6 U
Antimony	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ
Arsenic	6.2	99.9	19.4	150	52.8	125	8.0	1.2 UJ	7.8 J
Barium	209	592	417	435	630	245	68.8	98.9	201
Beryllium	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Cadmium	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.72 U	0.40 U
Calcium	127000	137000	122000	136000	119000	92300	62000	123000	121000
Chromium	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.7 J	2.5	1.0 U
Cobalt	50.0 U	1.4 J	3.2 U	2.0 U	0.70 U	0.93 U	1.0 U	0.70 U	0.70 U
Copper	1.6 U	1.6 U	2.2 J	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Iron	1730	20500	6420	18500	7200	9240	2020	10.6 U	1620
Lead	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	33700	31600	69700	35500	42200	72500	22100	38500	32500
Manganese	929	155	155	83.4	47.8	101	564	0.93 U	898
Mercury	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	3.5 J	2.6 J	6.4	12.6	2.3 J	3.4	3.2	1.8 J	1.9 J
Potassium	2420 J	12800	4090 J	11100	16900 J	22500 J	1330 J	2540 J	2510 J
Selenium	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
Silver	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	14700	23400	34400	21900	36400	76600	10600	18000	13700
Thallium	10.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	1.2 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Zinc	0.70 UJ	1.6 J	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ
INDICATOR PARAMETERS (mg/L)									
Ammonia-Nitrogen	0.10 U	11.7	1.9	4.3	7.2	4.3	0.53	0.10 U	0.10 U
Chemical Oxygen Demand	3.0 U	27.5 U	40.2	37.3	33.7 U	94.2	11.3 U	3.0 U	3.0 U
Chloride	25.4	17.6	34.8	13.1	20.6	19.9	11.4	27.0	25.5
Total Suspended Solids	15.6	50.4	19.6	80.0	58.8	115	91.2	86.0	19.6

Notes:

NA - Not analyzed; parameter removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.
Sampling locations, MB-3 and MB-4, removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.

(1) Unknown Tentatively Identified Compounds (TICs) are summed or totaled by the number of unknown TICs and by the concentration of unknown TICs. TICs for which a compound class (e.g., unknown phtalate) or individual compound (e.g., 1H-Benzotriazole) are identified, those compounds are listed separately with concentration and data qualifier and are not included in the total number or total concentration. The unknown TICs were totaled to provide condensed summary information in the data table. Any questions regarding specific unknown TICs can be investigated in the data validation report.

Table 7: POND WATER CHEMISTRY DATA, SEPTEMBER 2001

SAMPLING LOCATION	OFFSITE POND	OFFSITE POND	ONSITE POND	ONSITE POND
LOCATION IN MATRIX	BOTTOM (PW-4)	TOP (PW-3)	BOTTOM (PW-2)	TOP (PW-1)
TCL VOLATILES (ug/L)				
NA	NA	NA	NA	NA
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS (Retention Time)				
NA	NA	NA	NA	NA
TCL SEMIVOLATILES (ug/L)				
Hexachlorocyclopentadiene	NA	NA	NA	10 U
2,4-Dinitrophenol				24 U
SEMIVOLATILE TENTATIVELY IDENTIFIED COMPOUNDS (Retention Time) (1)				
Straightchain Alkane	NA	NA	NA	2 J
DISSOLVED TAL METALS (ug/L)				
Aluminum	NA	NA	NA	43.6 U
Antimony	NA	NA	NA	1.7 UJ
Arsenic	NA	NA	NA	1.7 J
Barium	NA	NA	NA	14.6
Beryllium	NA	NA	NA	0.40 U
Cadmium	NA	NA	NA	0.40 U
Calcium	NA	NA	NA	32700
Chromium	NA	NA	NA	1.0 U
Cobalt	NA	NA	NA	0.70 UJ
Copper	NA	NA	NA	1.8 UJ
Iron	NA	NA	NA	10.6 U
Lead	NA	NA	NA	1.8 U
Magnesium	NA	NA	NA	26400
Manganese	NA	NA	NA	0.21 J
Mercury	NA	NA	NA	0.10 U
Nickel	NA	NA	NA	1.4 J
Potassium	NA	NA	NA	5140 J
Selenium	NA	NA	NA	3.4 J
Silver	NA	NA	NA	0.50 U
Sodium	NA	NA	NA	16000
Thallium	NA	NA	NA	4.1 U
Vanadium	NA	NA	NA	0.80 UJ
Zinc	NA	NA	NA	0.70 UJ
INDICATOR PARAMETERS (mg/L)				
Ammonia-Nitrogen	NA	NA	NA	0.10 U
Chemical Oxygen Demand	NA	NA	NA	22.2
Chloride	NA	NA	NA	15.9
Total Suspended Solids	NA	NA	NA	19.2 J
FIELD PARAMETERS				
Temperature (C)	NA	NA	NA	21.9
pH	NA	NA	NA	6.93
Conductivity (umhos/cm) (2)	NA	NA	NA	400
Conductivity (umhos/cm) (3)	NA	NA	NA	406
Dissolved Oxygen (mg/L)	NA	NA	NA	9.3

Notes:

NA - Not analyzed; parameter removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision. Sampling locations, PW-2, PW-3, and PW-4, removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.

ND - Not Detected

(1) Unknown Tentatively Identified Compounds (TICs) are summed or totaled by the number of unknown TICs and by the concentration of unknown TICs. TICs for which a compound class (e.g., unknown phtalate) or individual compound (e.g., 1H-Benzotriazole) are identified, those compounds are listed seperately with concentration and data qualifier and are not included in the total number or total concentration. The unknown TICs were totaled to provide condensed summary information in the data table. Any questions regarding specific unknown TICs can be investigated in the data validation report.

(2) - field measured specific conductivity at ambient temperature

(3) - specific conductivity corrected to 25 degrees C.

Table 8: SURFACE WATER CHEMISTRY DATA, SEPTEMBER 2001

LOCATION	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	DUPLICATE
	Downstream	Adjacent	Adjacent	Adjacent	Upstream	Lugar Creek	(SW-1)
TCL VOLATILES (ug/L)							
Methylene Chloride	10 U	NA	NA	NA	NA	NA	10 U
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS (Retention Time)		NA	NA	NA	NA	NA	
TCL SEMIVOLATILES (ug/L)							
Hexachlorocyclopentadiene	10 U	NA	NA	NA	10 U	9 U	10 U
2,4-Dinitrophenol	25 U	NA	NA	NA	25 UJ	23 U	25 U
SEMIVOLATILE TENTATIVELY IDENTIFIED COMPOUNDS (Retention Time) (1)							
Trichloropropene					3 J		
DISSOLVED TAL METALS (ug/L)							
Aluminum	43.6 U	NA	NA	NA	43.6 U	43.6 U	43.6 U
Antimony	1.7 UJ	NA	NA	NA	1.7 UJ	1.7 UJ	1.7 UJ
Arsenic	2.7 J	NA	NA	NA	3.5 J	1.8 J	2.2 J
Barium	73.3	NA	NA	NA	57.5	56.1	74.6
Beryllium	0.40 U	NA	NA	NA	0.40 U	0.40 U	0.40 U
Cadmium	0.40 U	NA	NA	NA	0.40 U	0.40 U	0.40 U
Calcium	80300	NA	NA	NA	72300	69400	81000
Chromium	1.0 U	NA	NA	NA	1.0 U	1.0 U	1.0 U
Cobalt	0.70 UJ	NA	NA	NA	0.70 U	0.70 UJ	0.70 UJ
Copper	1.6 UJ	NA	NA	NA	1.6 UJ	1.6 UJ	1.6 UJ
Iron	10.6 U	NA	NA	NA	10.6 U	10.6 U	10.6 U
Lead	1.8 U	NA	NA	NA	1.8 U	1.8 U	1.8 U
Magnesium	24900	NA	NA	NA	21600	20800	25000
Manganese	40.6	NA	NA	NA	14.4	13.6	51.6
Mercury	0.10 U	NA	NA	NA	0.10 U	0.10 U	0.10 U
Nickel	40.0 U	NA	NA	NA	1.8 J	1.4 U	1.4 U
Potassium	3730 J	NA	NA	NA	4390	4340 J	3860 J
Selenium	2.8 U	NA	NA	NA	2.8 U	3.0 J	5.0 U
Silver	0.50 U	NA	NA	NA	0.50 U	0.50 U	0.50 U
Sodium	20500	NA	NA	NA	16600	16500	20200
Thallium	4.1 U	NA	NA	NA	4.1 U	4.1 U	4.1 U
Vanadium	0.60 UJ	NA	NA	NA	0.60 U	0.60 U	0.60 UJ
Zinc	0.70 UJ	NA	NA	NA	0.70 U	0.70 U	0.70 UJ
INDICATOR PARAMETERS (mg/L)							
Ammonia-Nitrogen	0.20	NA	NA	NA	0.10 U	0.13	0.17
Chemical Oxygen Demand	22.9	NA	NA	NA	44.2	42.9	24.3
Chloride	33.2	NA	NA	NA	27.5	27.0	32.9
Total Suspended Solids	64.4 J	NA	NA	NA	144	154 J	55.2 J
FIELD PARAMETERS							
Temperature (C)	20	NA	NA	NA	20.0	20	20
pH	6.46	NA	NA	NA	7.17	6.95	6.46
Conductivity (umhos/cm) (2)	550	NA	NA	NA	500	490	550
Conductivity (umhos/cm) (3)	581	NA	NA	NA	529	518	581
Dissolved Oxygen (mg/L)	7.08	NA	NA	NA	7.0	6.97	7.08

Notes:

NA - Not analyzed; parameter removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision. Sampling locations, SW-2, SW-3, and SW-4, removed from water quality monitoring program as part of a condensed monitoring program following a no-further-action Record of Decision.

NR - Not recorded

ND - Not Detected

(1) Unknown Tentatively Identified Compounds (TICs) are summed or totaled by the number of unknown TICs and by the concentration of unknown TICs. TICs for which a compound class (e.g., unknown phtalate) or individual compound (e.g., 1H-Benzotriazole) are identified, those compounds are listed separately with concentration and data qualifier and are not included in the total number or total concentration. The unknown TICs were totaled to provide condensed summary information in the data table. Any questions regarding specific unknown TICs can be investigated in the data validation report.

(2) - field measured specific conductivity at ambient temperature

(3) - specific conductivity corrected to 25 degrees C.

TABLE 9: WATER QUALITY CRITERIA - UPDATED 2000

Parameter	Acute Aquatic Criteria		Chronic Aquatic Criteria		Human Health		MCL	
TCL Volatiles (ug/L)								
Acetone	10000	+	222	+	--		--	
Benzene	5300	E	118	+	400	I	5	E
Chlorobenzene	1950	+	50	E	2026	+	--	
1,2-Dichloroethene (total) (1)	--		--		--		70 and 100	E
Methylene Chloride	193000	E	4289	+	157	E	--	
Toluene	17500	E	389	+	424000	I	1000	E
Trichloroethene	45000	E	21900	E	807	I	5	E
Vinyl Chloride	--		--		5246	I	2	E
TCL Semivolatiles (ug/L)								
Phenol	10200	E	2560	E	3500	E	--	
Phthalate Esters	940	E	3	E	50000	I	--	
TAL Metals and Cyanide (ug/L)								
Aluminum	--		--		--		--	
Antimony	--		--		45000	I	6	E
Arsenic	360	I	190	I	0.175	I	50	E
Barium	--		--		--		2000	E
Beryllium	--		--		1.17	I	4	E
Cadmium*	6.7	I	1.6	I	60	+	5	E
Calcium	--		--		--		--	
Chromium	16	I	11	I	3389	+	100	E
Cobalt	--		--		--		--	
Copper* (2)	26	I	18	I	--		1300	E
Cyanide	22	I	5.2	I	24242	+	200	E
Iron	1000	E	--		--		--	
Lead* (2)	150	I	5.8	I	51	+	15	E
Magnesium	--		--		--		--	
Manganese	--		--		--		--	
Mercury	2.4	I	0.012	I	0.15	I	2	E
Nickel*	2100	I	240	I	100	I	100	E
Potassium	--		--		--		--	
Selenium	130	I	25	I	--		50	E
Silver*	9.2	I	0.12	E	--		50	E
Sodium	--		--		--		--	
Thallium	--		--		48	I	2	E
Vanadium	11000	+	100	+	--		--	
Zinc*	175	I	160	I	--		--	
IDEM Parameters (mg/L)								
Ammonia, Total Unionized**	0.027	I	0.0029	I	--		--	
COD	--		--		--		--	
Chloride	860	I	230	I	--		--	
TSS	--		--		--		--	

Notes:

*Acute and chronic criteria calculated based on worst-case hardness=161 mg/L

**Acute and chronic criteria calculated based on worst-case t=5C, pH=7.0

-- Criteria not developed

MCL - Maximum Contaminant Level (Updated per the Safe Drinking Water Act of 1986 and later revisions known as the Phase I, Phase II, and Phase V rules. Phase I became effective January 9, 1989, Phase II became effective in 1992, and Phase V became effective January 17, 1994.)

Source of Data

E - U.S. EPA

I - IDEM (327 IAC 2)

+ - See section 6.2 of February 1990 report by Beak Consultants Limited Baseline Water Quality Conditions for discussion of sources for the criteria.

(1) The 1,2-Dichloroethene MCL standards are divided into cis-1,2-Dichloroethene at 70 ug/L and trans-1,2 Dichloroethene at 100 ug/L.

(2) - The "MCL" value is an action level for lead and copper (i.e., the lead and copper rule) but it only applies to water supplies as measured at the household tap.

TABLE 10: CALCULATED ACUTE AQUATIC CRITERIA AND CHRONIC AQUATIC CRITERIA FOR AMMONIA-NITROGEN, SEPTEMBER 2001

Sample Matrix	Well Number	pH	Temp (C)	Total Ammonia In Sample (mg/L)	Calculated Un-Ionized Ammonia (In Sample) (mg/L)*	Calculated Un-Ionized Ammonia Criteria (mg/L)** AAC	Calculated Un-Ionized Ammonia Criteria (mg/L)** CAC	Criteria Exceeded AAC	Criteria Exceeded CAC
Ground Water	MB-1	7.2	16.0	0.10 U	0.0003	0.083	0.0109	No	No
	MB-2	6.8	16.0	11.7	0.0213	0.040	0.0039	No	Yes
	MB-5	6.7	15.0	1.9	0.0025	0.030	0.0028	No	No
	MB-6	6.6	15.0	4.3	0.0046	0.025	0.0022	No	Yes
	MB-7	7.1	16.0	7.2	0.0286	0.071	0.0084	No	Yes
	MB-8	7.3	15.5	4.3	0.0243	0.086	0.0120	No	Yes
	MB-9	7.3	16.0	0.53	0.0028	0.084	0.0111	No	No
	MB-10	7.0	15.0	0.10 U	0.0001	0.055	0.0059	No	No
	Duplicate+	7.2	16.0	0.10 U	0.0003	0.083	0.0109	No	No
Pond Water	On-site (S)	6.9	21.9	0.10 U	0.0002	0.077	0.008	No	No
Surface Water	SW-1	6.5	20.0	0.20	0.0002	0.027	0.0024	No	No
	Duplicate++	6.5	20.0	0.17	0.0002	0.027	0.0024	No	No
	SW-5	7.2	20.0	0.10 U	0.0003	0.099	0.0122	No	No
	SW-6	7.0	20.0	0.13	0.0005	0.070	0.0073	No	No

Notes:

* - Values calculated according to the Indiana Register (1990) (327 IAC 2). Unionized values calculated using 1/2 the detection limit for less than detection limit total results.

** - Calculated according to the USEPA Quality Criteria for Water, 1986 EPA 440/5-86-001(as revised by Water Quality Criteria and Standards Activity Report, August 1992)

\+ - Readings taken from monitoring well MB-1

++ - Readings taken from surface water sample location SW-1.

AAC - Acute Aquatic Criteria

CAC - Chronic Aquatic Criteria

TABLE 11: ACUTE AQUATIC CRITERIA AND CHRONIC AQUATIC CRITERIA FOR TAL METALS CONCENTRATIONS DEPENDENT ON HARDNESS, SEPTEMBER 2001

Sample Matrix	Sample Location	Hardness (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Cadmium (ug/L)				Chromium (ug/L)				Copper (ug/L)				Lead (ug/L)				Nickel (ug/L)				Silver (ug/L)				Zinc (ug/L)			
					Sample Conc.**		AAC*	CAC*	Sample Conc.**		AAC*	CAC*	Sample Conc.**		AAC*	CAC*	Sample Conc.**		AAC*	CAC*	Sample Conc.**		AAC*	CAC*	Sample Conc.**		AAC*	CAC*	Sample CAC(1Conc.**		AAC*	CAC*
Dissolved Metals																																
Ground Water	MB-1	456 2	127.0	33 7	0.40	U	22	4	1.0	U	6019	717	1.6	U	74	43	1.8	U	564	22	3.5	J	5121	569	0.50	U	55	0.7	UJ	423	383
	MB-2	472.5	137.0	31.6	0 40	U	23	4	1.0	U	6195	738	1.6	U	77	45	1.8	U	590	23	2.6	J	5276	587	0 50	U	59	1.6	J	436	395
	MB-5	591 8	122 0	69 7	0 40	U	29	5	1.0	U	7449	888	2.2	J	95	54	1 8	U	785	31	6.4		6383	710	0.50	U	86	0.7	UJ	528	478
	MB-6	486 1	136 0	35 5	0 40	U	23	4	1.0	U	6340	756	1.6	U	79	46	1.8	U	611	24	12.6		5404	601	0.50	U	62	0.7	UJ	447	405
	MB-7	471 2	119 0	42 2	0 40	U	23	4	1.0	U	6180	737	1.6	U	76	44	1.8	U	587	23	2.3	J	5263	585	0.50	U	58	0.7	UJ	435	394
	MB-8	529 1	92 3	72 5	0 40	U	26	4	1.0	U	6796	810	1.6	U	85	49	1.8	U	681	27	3 4		5806	645	0.50	U	71	0.7	UJ	480	435
	MB-9	245 9	62 0	22 1	0 40	U	11	2	2.7	J	3629	433	1.6	U	41	26	1.8	U	257	10	3.2		3037	338	0.50	U	19	0 7	UJ	251	227
	MB-10	485 9	123 0	38 5	0.72	U	22	4	2 5		6124	730	1.6	U	76	44	1.8	U	579	23	1.8	J	5214	580	0.50	U	57	0.7	UJ	431	390
	Duplicate +	436 2	121 0	32.5	0 40	U	21	4	1.0	U	5803	692	1 6	U	71	42	1.8	U	532	21	1.9	J	4931	548	0.50	U	51	0.7	UJ	408	389
Pond Water	On-site (S)	190.4	32.7	26 4	0 40	U	8	2	1.0	U	2942	351	1.6	UJ	33	20	1.8	U	185	7	1.4	J	2445	272	0 50	U	12	0 7	UJ	202	183
Surface Wate	SW-1	303 2	80 3	24 9	0 40	U	14	3	1.0	U	4308	513	1.6	UJ	50	31	1.8	U	335	13	40.0	U	3625	403	0.50	U	27	0.7	UJ	300	271
	Duplicate++	305.4	81.0	25 0	0.40	U	14	3	1.0	U	4333	516	1.6	UJ	51	31	1.8	U	338	13	1.4	U	3647	405	0.50	U	28	0.7	UJ	301	273
	SW-5	269.6	72.3	21.6	0.40	U	12	2	1.0	U	3913	466	1.6	UJ	45	28	1.8	U	289	11	1.8	J	3282	365	0.50	U	22	0.7	U	271	246
	SW-6	259.1	69.4	20.8	0.40	U	11	2	1.0	U	3787	451	1.6	UJ	43	27	1.8	U	274	11	1.4	U	3174	353	0.50	U	21	0.7	U	262	237

Notes:
* - Values calculated according to the Indiana Register (1990) (327 IAC 2).
** - Sample concentrations are ug/L (ppb)
AAC - Acute Aquatic Criteria
CAC - Chronic Aquatic Criteria
+ - Duplicate sample collected from monitoring well MB-1.
++ - Duplicate sample collected from surface water sampling location SW-1.
(1) No CAC is calculated for silver.

TABLE 12: SAMPLING LOCATIONS EXCEEDING APPLICABLE WATER QUALITY CRITERIA, SEPTEMBER 2001

Parameter	Matrix	Sample Location	Monitoring Well Zone (1)	Sample Concentration (ug/L)	Criterion Exceeded	Criterion Concentration (ug/L)	Source	Average (1) Concentration Of Zone (ug/L)	Exceeds Criterion	Concentration After Mixing (ug /L) (2)	Exceeds Criterion
Dissolved TAL Metals											
Arsenic	Groundwater	MB-1	I	6.2	HH	0.175	I	53.1	Yes	0.03	No
Arsenic	Groundwater	MB-2	I	99.9	HH	0.175	I	53.1	Yes	0.03	No
Arsenic	Groundwater	MB-5	II	19.4	HH	0.175	I	84.7	Yes	0.05	No
Arsenic	Groundwater	MB-6	II	150	HH	0.175	I	84.7	Yes	0.05	No
Arsenic	Groundwater	MB-7	III	52.8	HH	0.175	I	88.9	Yes	0.05	No
Arsenic	Groundwater	MB-8	III	125	HH	0.175	I	88.9	Yes	0.05	No
Arsenic	Groundwater	MB-9	NA	8.0	HH	0.175	I	--	--	--	--
Arsenic	Groundwater	Duplicate	I	7.8 J	HH	0.175	I	53.1	Yes	0.03	No
Arsenic	Groundwater	MB-2	I	99.9	MCL	50	E	53.1	Yes	0.03	No
Arsenic	Groundwater	MB-6	II	150	MCL	50	E	84.7	Yes	0.05	No
Arsenic	Groundwater	MB-7	III	52.8	MCL	50	E	88.9	Yes	0.05	No
Arsenic	Groundwater	MB-8	III	125	MCL	50	E	88.9	Yes	0.05	No
Iron	Groundwater	MB-1	I	1730	AAC	1000	E	11115	Yes	6	No
Iron	Groundwater	MB-2	I	20500	AAC	1000	E	11115	Yes	6	No
Iron	Groundwater	MB-5	II	6420	AAC	1000	E	12460	Yes	7	No
Iron	Groundwater	MB-6	II	18500	AAC	1000	E	12460	Yes	7	No
Iron	Groundwater	MB-7	III	7200	AAC	1000	E	8220	Yes	5	No
Iron	Groundwater	MB-8	III	9240	AAC	1000	E	8220	Yes	5	No
Iron	Groundwater	MB-9	NA	2020	AAC	1000	E	--	--	--	--
Iron	Groundwater	Duplicate	I	1620	AAC	1000	E	11115	Yes	6	No
Indicator Parameters				(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Unionized	Groundwater	MB-2	I	0.0213	CAC	0.0039	E	0.0074	Yes	0.000004	No
Ammonia (mg/L)	Groundwater	MB-6	II	0.0046	CAC	0.0022	E	0.0025	Yes	0.000001	No
	Groundwater	MB-7	III	0.0286	CAC	0.0084	E	0.0102	Yes	0.000006	No
	Groundwater	MB-8	III	0.0243	CAC	0.0120	E	0.0102	No	0.000006	No

Notes:

AAC - Acute Aquatic Criteria
CAC - Chronic Aquatic Criteria
Duplicate - Duplicate sample collected from monitoring well MB-1
NA - Not applicable; sampling location is not included in the monitoring zone calculations.
HH - Human Health Criteria
MCL - Maximum Contaminant Level

(1) Refer to the Environmental Resources Management (ERM) Remedial Action Plan for Marion (Bragg) Landfill Site, Marion, Indiana, dated 1989, for definition of monitoring well zones and concentration calculations. Monitoring well zone I will consist of MB-1 and MB-2 with condensed monitoring program, since MB-3 and MB-4 have been removed from the sampling program.

(2) Refer to the Camp, Dresser, and McKee (CDM) Remedial Investigation Report, dated 1987, for mixing zone calculations.

APPENDIX A

Chain-of-Custody Forms

COMPUCHEM
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501 Madison Avenue
Cary, NC 27513
1-800-833-5097

CHAIN-OF-CUSTODY RECORD 1 of 3

No. 057006

Project Name: Marion Bragg	Client Address: CDM Inc	Point-of-Contact: C Tau... / P Burton
	105 Commerce Dr	
Carrier: Fed Ex	Suite B	Telephone No.: 317 7183600
Airbill No.: 825360779296	Danville IN 46122	Sampling complete? Y or N (see Note 1)
Sampler Name: W. Peter Burton	Sampler Signature: W. P B	Project-specific (PS) or Batch (B) QC ? ____

BOX #1	BOX #2	BOX #3	Box #4	Box #5
1. Surface Water	A. HCl + Ice	F. Filtered	H. High	C. CLP 3/90
2. Ground Water	B. HNO3 + Ice	U. Unfiltered	M. Medium	S. SW-846
3. Leachate	C. NaOH + Ice	B. Both	L. Low	W. CWA 600-series
4. Rinsate	D. H2SO4 + Ice			O. Other____
5. Soil / Sediment / Sludge	E. Unpreserved			T. TCLP
6. Trip Blank	F. Ice Only			
7. Oil	G. Other____			
8. Waste	H. NaHSO4 + Ice			
9. Other____	I. ZnAc+NaOH + Ice			
	J = B, C, ... K = A, B, D, F			

Sample ID (9 characters maximum)	Date: Year: 2001	Time	Matrix (Box #1)	Preservative (Box #2)	Filtered / Unfiltered (Box #3)	Expected Conc. (Box #4)	Method (Box #5)	No. of Bottles	Use for Lab QC (MS or DUP)	VOA	SVOC	Pesticide	PCB	Herbicide	Metals / Mercury dissolved	Cyanide	TOC / TOX	O&G / TPH	TSS / Cl	COD	NH3	Remarks / Comments (see Notes 2 & 3)
GW01CJ	9/19	16:38	2	J	B	L	5	6			X				X				X	X	X	VOC - HCl + Ice
GW02CJ	9/19	17:30	↓	↓	↓	↓	↓	↓			↓				↓				↓	↓	↓	BNA - Ice
GW03CJ	9/20	08:15	↓	↓	↓	↓	↓	↓			↓				↓				↓	↓	↓	dissolved TAL metals - HNO3 + Ice
GW04CJ	/	09:00	↓	↓	↓	↓	↓	↓			↓				↓				↓	↓	↓	COD, NH3 - H2SO4 + Ice
GW05CJ	/	09:50	↓	↓	↓	↓	↓	↓			↓				↓				↓	↓	↓	TSS/Cl - Ice
GW06CJ	/	10:15	↓	↓	↓	↓	↓	↓			↓				↓				↓	↓	↓	
GW07CJ	/	10:45	↓	K	↓	↓	↓	9		X	↓				↓				↓	↓	↓	
GW08CJ	/	12:00	↓	K	↓	↓	↓	8		X	X				↓				↓	↓	↓	
GW08MDCJ	/	:	↓	↓	↓	↓	↓	↓		↓	↓				↓				↓	↓	↓	
GW08MSCJ	/	:	↓	↓	↓	↓	↓	↓		↓	↓				↓				↓	↓	↓	

Clients Special Instructions: Pls. Record Temp. of coolers and pH of samples once upon arrival at lab. Temperature ____ °C

Lab: Received in Good Condition? Y or N **Describe Problems, If any:**

#1 Relinquished By: (Sig) W. P Burton Date: 9/20/01	#2 Relinquished By: (Sig) Date:	#3 Relinquished By: (Sig) Date:
Company Name: CDM Inc Time: 1520	Company Name: Time:	Company Name: Time:
#1 Received By: (Sig) Date:	#2 Received By: (Sig) Date:	#3 Received By: (Sig) Date:
Company Name: Time:	Company Name: Time:	Company Name: Time:

Note (1): If "N" lab will hold samples to await remainder of project-maximizing batch size and minimizing QC ratio; if "Y" lab will begin processing batches now.
Note (2): Samples stored ... days ... date ... mail ... no charge ... Note (3): lab copies of data destroyed after three years

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Cary, NC 27513
1-800-833-5097

CHAIN-OF-CUSTODY RECORD 2 of 3

No. 056998

Project Name: Marion Barry	Client Address: Cam Tec 105 Commerce Dr Suite B Danville IL 61832	Point-of-Contact: C. Jackson / P. Bartlett
Carrier: Fed Ex		Telephone No.: 217 443 3600
Airbill No.: 822360779216		Sampling complete? (Y) or N (see Note 1)
Sampler Name: (W. Peter Burton)	Sampler Signature: (WPB)	Project-specific (PS) or Batch (B) QC?

BOX #1	1. Surface Water	6. Trip Blank	BOX #2	A. HCl + Ice	F. Ice Only	BOX #3	F. Filtered		Box #4	H. High		Box #5	C. CLP 3/90	T. TCLP
	2. Ground Water	7. Oil		B. HNO3 + Ice	G. Other_____		U. Unfiltered			M. Medium			S. SW-846	
	3. Leachate	8. Waste		C. NaOH + Ice	H. NaHSO4 + Ice		B. Both			L. Low			W. CWA 600-series	
	4. Rinsate	9. Other_____		D. H2SO4 + Ice	I. ZnAc+NaOH + Ice								O. Other_____	
	5. Soil / Sediment / Sludge			E. Unpreserved	J. BDF K. ABDF									

Sample ID (9 characters maximum)	Date: Year: 2011	Time	Box #1 Matrix	Box #2 Preservative	Box #3 Filtered / Unfiltered	Box #4 Expected Conc.	Box #5 Method	No. of Bottles	Use for Lab QC (MS or DUP)	VOA	SVOC	Pesticide	PCB	Herbicide	Metals / Mercury dissolved	Cyanide	TOC / TOX	O&G / TPH	TSS	COD	NH3N	Remarks / Comments (see Notes 2 & 3)
SWOEMSLPCS	9/20	12:00	2	K	B	L	C	9		X	X				X				X	X	X	extra VOC for pH check
SWO1CJ	9/21	14:00	1					9														
SWO1DPCT	/	:																				VOC - HCl+TCE
SWO1MBCT	/	:																				PNA ICE
SWO1MSDPCJ	/	:																				4 vials TTA w/out HCl
SWO2CJ	/	15:30		J				6														Formalin - H2SO4
SWO3CS	/	15:40						6														TCL/CL - ICE
SWO11LCT	/	17:00	6	A	U			2		X												
SWO1CJ	/	14:15	1	J	B			6			X				X				X	X	X	
	/	:																				

Clients Special Instructions: pls record Temp of coolers and pH of samples on COC upon receipt in lab. Temperature _____ °C

Lab: Received in Good Condition? Y or N **Describe Problems, If any:**

#1 Relinquished By: (Sig)	Date: 9/20/11	#2 Relinquished By: (Sig) Date:	#3 Relinquished By: (Sig) Date:
Company Name:	Time:	Company Name: Time:	Company Name: Time:
#1 Received By: (Sig)	Date:	#2 Received By: (Sig) Date:	#3 Received By: (Sig) Date:
Company Name:	Time:	Company Name: Time:	Company Name: Time:

Note (1): If "N" lab will hold samples to await remainder of project-maximizing batch size and minimizing QC ratio; if "Y" lab will begin processing batches now.
Note (2): Samples stored 60 days after date report mailed at no extra charge [illegible] lab [illegible] of d[illegible] stroy [illegible] er th [illegible] ars.

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CHAIN-OF-CUSTODY RECORD 3 of 3

No. 056991

Project Name: [illegible]	Client Address: [illegible]	Point-of-Contact: C. [illegible]
Carrier: Fed Ex	105 [illegible] Dr	Telephone No.: [illegible]
Airbill No.: 8253607793[illegible]	Suite B	Sampling complete? (Y) or N (see Note 1)
Sampler Name: [illegible]	[illegible]	Project-specific (PS) or Batch (B) QC ? ____
	Sampler Signature: [illegible]	

BOX #1	BOX #2	BOX #3	Box #4	Box #5
1. Surface Water	A. HCl + Ice	F. Filtered	H. High	C. CLP 3/90
2. Ground Water	B. HNO3 + Ice	U. Unfiltered	M. Medium	S. SW-846
3. Leachate	C. NaOH + Ice		L. Low	W. CWA 600-series
4. Rinsate	D. H2SO4 + Ice			O. Other ____
5. Soil / Sediment / Sludge	E. Unpreserved			T. TCLP
6. Trip Blank	F. Ice Only			
7. Oil	G. Other ____			
8. Waste	H. NaHSO4 + Ice			
9. Other field QA	I. ZnAc+NaOH + Ice			
	K = [illegible] D F			

Sample ID (9 characters maximum)	Date:Year 2001	Time	Box #1 Matrix	Box #2 Preservative	Box #3 Filtered / Unfiltered	Box #4 Expected Conc.	Box #5 Method	No. of Bottles	Use for Lab QC (MS or DUP)	VOA	SVOC	Pesticide	PCB	Herbicide	Metals / Mercury dissolved	Cyanide	TOC / TOX	O&G / TPH	TSS [illegible]	Nitrate	COD		Remarks / Comments (see Notes 2 & 3)
GW09FBCJ	9/20	13:30	9	K	U	L	S	9		X	X				X				X	X	X		VOC - HCl Ice
GW10TBCJ	↓ N	13:00	6	A	↓	↓	↓	2		X													SVOC - Ice
	/	:																					TSS dissolved metals - HNO3 Ice
	/	:																					COD, NH3-N - H2SO4, Ice
	/	:																					NO3/Cl - Ice
	/	:																					
	/	:																					
	/	:																					
	/	:																					
	/	:																					

Clients Special Instructions: pls record time of receipt and pH of samples on COC upon receipt @ lab Temperature ____ °C

Lab: Received in Good Condition? Y or N Describe Problems, If any:

#1 Relinquished By: (Sig) [illegible]	Date: 9/20/01	#2 Relinquished By: (Sig)	Date:	#3 Relinquished By: (Sig)	Date:
Company Name: [illegible]	Time: 1500	Company Name:	Time:	Company Name:	Time:
#1 Received By: (Sig)	Date:	#2 Received By: (Sig)	Date:	#3 Received By: (Sig)	Date:
Company Name:	Time:	Company Name:	Time:	Company Name:	Time:

Note (1): If "N" lab will hold samples to await remainder of project-maximizing batch size and minimizing QC ratio; if "Y" lab will begin processing batches now.
Note (2) Sar[illegible] stor[illegible] days [illegible] date [illegible] mai[illegible] no e[illegible] arg[illegible] ate ([illegible] lab c[illegible] of d[illegible] stroy [illegible] er th[illegible] ars.

APPENDIX B

Trillium, Inc.

Data Validation Reports

TRILLIUM INC.

DATA VALIDATION

FOR

MARION BRAGG LANDFILL
MARION, INDIANA

ORGANIC ANALYSIS DATA
Volatiles in Water

SDG Nos. J1067 and K1067
September 2001 Sample Collections

Chemical Analyses Performed by:

CompuChem Environmental
Cary, North Carolina

FOR

O & M, Inc.
Danville, Indiana

BY

Trillium, Inc.
356 Farragut Crossing Drive
Knoxville, Tennessee 37922
(865) 966-8880

October 29, 2001

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EXECUTIVE SUMMARY

Validation of the volatile organics analysis data prepared by CompuChem Environmental for five water samples, one field blank, and two trip blanks from the Marion Bragg Landfill site in Marion, Indiana, has been completed by Trillium, Inc. The data were reported by the laboratory in two separate data packages, under Sample Delivery Group (SDG) Numbers J1067 and K1067, which were received for review on October 3, 2001. The following samples were reported:

SDG No. J1067:

GW08CJ (MB-1)	GW08DPCJ (MB-1D)	GW07CJ (MB-2)
GW10TBCJ (trip blank)	GW09FBCJ (field blank)	

SDG No. K1067:

SW01CJ (SW-1)	SW01DPCJ (SW-1D)	SW04TBCJ (trip blank)

Samples GW01CJ and GW02CJ were also analyzed for volatile organics by the laboratory and results were included in the data package for SDG No. J1067. However, volatile organics analyses on these samples were not requested by the client. Therefore, the raw data for GW01CJ and GW02CJ were not included in the validation effort.

Sample GW09FBCJ was misidentified by the laboratory throughout the data package for SDG No. J1067 as GW08FBCJ. The correct sample identification, consistent with the chain of custody entry, is listed above and is used throughout this validation report.

Findings of the validation effort resulted in the following qualifications of reported sample results:

- Results for acetone in SW04TBCJ, GW08CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (J, UJ).
- Results for methylene chloride SW01DPCJ and SW04TBCJ were qualified as less than the contract required quantitation limit (10 U).
- Results for acetone in SW01CJ and SW01DPCJ were qualified as less than the contract required quantitation limit and as estimated (10 UJ).
- Results for cis-1,2-dichloroethene and trichloroethene in GW08CJ and GW08DPCJ were rejected (R). This well location must be re-sampled to obtain valid results for these analytes.

- Results for the compound tentatively identified as dimethoxymethane in SW01CJ, SW01DPCJ, and SW04TBCJ were rejected (R).

- The tentatively identified compound reported at retention time 15.57 minutes in SW01DPCJ was rejected (R).

All "B" qualifiers, applied by the laboratory to indicate the presence of an analyte in the associated method blank, were removed by the validator. Laboratory-applied "J" qualifiers were not removed by the validator except where superceded by validator-applied qualifiers.

Brief explanations of the reasons for the actions taken above may be found in the Overall Assessment (Section XIV). Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

Documentation issues observed in the data packages are discussed in Section XIII.

This validation report should be considered part of both data packages for all future distributions of the volatiles data.

INTRODUCTION

Analyses were performed according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis (OLM04.2). Results of sample analyses are reported by the laboratory as either qualified or unqualified; various qualifier codes are used to denote specific information regarding the analytical results.

Validation was performed in accordance with the USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review" (EPA 540/R-99/008, 10/99). The EPA Region II Standard Operating Procedure HW-6 (Rev. 11), "Evaluation of Organics Data for the CLP," (6/96) was also considered during the evaluation and professional judgment was applied as necessary and appropriate.

The data validation process is intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the CLP. An initial assumption is that each data package is presented in accordance with the CLP requirements. It is also assumed that each data package represents the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

During the validation process, laboratory data are verified against all available supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data validator. Validated results are, therefore, either qualified or unqualified. Unqualified results mean that the reported values may be used without reservation. Final validated results are annotated with the following codes in accordance with the National Functional Guidelines:

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

These codes are recorded on the customized data tables in Attachment A and the laboratory's Organic Analysis Data Sheets (Form I, Attachment B) to qualify the results as appropriate according to the review of the data packages.

Two facts should be noted by all data users. First, **the "R" qualifier means that the laboratory-reported value is unusable.** In other words, due to significant quality control problems, the analysis is invalid and provides no information as to whether the analyte is present or not. Rejected values should not appear on data tables because they cannot be relied upon, even as a last resort. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** Strict quality control conformance serves only to increase confidence in reported results; any analytical result will always contain some error.

The data user is also cautioned that the validation effort is based on the raw data printouts as provided by the laboratory. Software manipulation cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

I. Holding Times, Preservation and Sample Integrity

The water samples and associated blanks were collected September 19-20, 2001. All sample analyses were performed within seven days of collection, which is acceptable for water samples. Acceptable pH values of 1 were determined by the laboratory for each sample, confirming successful chemical preservation. Sample pHs were not documented directly on the chain of custody (COC) records, but were recorded on Water Batch Sheets provided in both data packages.

An acceptable cooler temperature (5 °C) on receipt at the laboratory was recorded on all three COC records applicable to these samples. The same temperature was also recorded on the laboratory's receiving logs in both data packages.

Sampler notations on each COC indicate that the samples for volatiles analysis were preserved with hydrochloric acid and iced. The narrative in each data package further states that all samples were received intact and properly refrigerated.

II. GC/MS Instrument Performance Checks

Seven instrument performance checks using bromofluorobenzene (BFB) were run and reported, representing every shift (12-hour period) during which samples or associated standards and quality control samples were analyzed. Results for all seven performance checks were acceptable.

III. Calibration

Analyses were performed on two gas chromatograph/mass spectrometer (GC/MS) systems, identified as F50055 and 5972HP59 (HP59). Bromomethane, dichlorodifluoromethane and one system monitoring compound were manually integrated in some of the calibration standards associated with this data set. In each case, the manual integration was correctly performed, properly documented and accurately incorporated into the applicable quantitation report. No internal standard peaks were manually integrated.

A. Initial Calibration (IC)

Three ambient purge ICs (9/25/01 on F50055 and 9/13/01 and 9/26/01 on HP59) were associated with the reported sample analyses. Documentation of all individual IC standards run was present in the applicable data package(s) and relative response factor (RRF) as well as percent relative standard deviation (%RSD) values were correctly calculated and accurately reported. All RRF values were above the minimum acceptance criterion (0.05) and %RSD values were below the 30% maximum acceptance criterion in all cases.

B. Continuing Calibration (CC)

Reported site sample and quality control analyses were performed under four CC standards, two on F50055 (9/26/01-23:02 and 9/27/01-09:23) and two on HP59 (9/25/01-15:10 and 9/26/01-15:45). Documentation of all four CC standards was present in the applicable data packages and RRF as well as percent difference (%D) values were correctly calculated and accurately reported.

All RRFs were above the 0.05 minimum criterion in all four CC standards. The following target analytes exceeded the maximum %D acceptance limit (25%):

9/26/01-23:02 (F50055)	trichlorofluoromethane - 25.9% acetone - 54.9%
9/25/01-15:10 (HP59)	acetone - 28.4%

Results for acetone in SW01CJ, SW01DPCJ, SW04TBCJ, GW08CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (J, UJ) due to the elevated %D values in the associated CC standards.

No positive results were reported for trichlorofluoromethane in the samples associated with the affected CC standard, the RRF for this compound was acceptable in the affected CC standard, and the %D was less than 50%; therefore, no additional qualifiers were applied based on the CC responses.

IV. Blanks

Four laboratory method blanks (MBs: VBLKNS, VBLKPD, VBLKOB, and VBLKOA) were analyzed with the samples in these SDGs. Methylene chloride (2 µg/L) was detected in VBLKOA; no other target analytes were reported in any of the MBs. Results for methylene chloride SW01DPCJ and SW04TBCJ were qualified as less than the contract required quantitation limit (CRQL, 10 U) because the reported values were less than ten times the concentration found in the associated method blank. The "B" qualifiers applied by the laboratory to these results to indicate that methylene chloride was also present in the associated method blank were removed by the validator.

One storage blank (VHBLKOD) was also analyzed in association with the site samples. No target analytes were detected in the storage blank.

Two trip blanks (GW10TBCJ and SW04TBCJ) and one field blank (GW09FBCJ) were included in this data set. After qualifications based on laboratory blank contamination, acetone was found in SW04TBCJ (6 µg/L). Results for acetone in SW01CJ and SW01DPCJ were qualified as less than the CRQL based on the associated trip blank contamination (10 U) because the sample concentrations were less than ten times the associated trip blank concentration.

V. System Monitoring Compound Recoveries

Recoveries of the three system monitoring compounds (SMCs) in the reported results for all samples and blanks were correctly calculated, accurately reported and within the acceptance limits as documented on the summary forms.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Samples GW08CJ and SW01CJ were prepared and analyzed as MS/MSD pairs. Percent recoveries (%R) and relative percent differences (RPDs) between paired recoveries were correctly calculated and accurately reported for both sets of data. The %Rs for all spiked target compounds were acceptable (80-106%) in both quality control sample pairs. Acceptable reproducibility was demonstrated for all spiked target analytes in the spiked analyses of GW08CJ (RPDs ≤9), however unacceptable RPDs were observed for four of the five spiked compounds in the spiked analyses of SW01CJ:

1,1-dichloroethene - 28 RPD (QC ≤14%)
trichloroethene - 19 RPD (QC ≤14%)
benzene - 13 RPD (QC ≤11%)
toluene - 19 RPD (QC ≤13%)

None of these target analytes was detected in SW01CJ, and acceptable recoveries were obtained for all spiked analytes in both spiked analyses. Therefore, no sample results were qualified on this basis.

No non-blank-related, unspiked target analytes were detected in any of the three analyses of SW01CJ or GW08CJ.

VII. Field Duplicate

Sample GW08DPCJ was identified as a field duplicate of GW08CJ. cis-1,2-Dichloroethene (19 µg/L) and trichloroethene (45 µg/L) were reported in GW08DPCJ but neither analyte was detected (10 U) in GW08CJ. The absence of these compounds in GW08CJ was confirmed in the MS and MSD analyses of this sample (see Section VI). Historically, both compounds have been consistently found in the samples collected at this location. With that in mind, the significant discrepancies between the results for this field duplicate pair suggest an error during sample collection, handling, or analysis, rather than a true discrepancy between actual duplicate samples collected from this location. Based on the available documentation, however, it is not possible for the validator to speculate further, or offer any conclusive evidence regarding the source of the apparent error. Results for cis-1,2-dichloroethene and trichloroethene in GW08CJ and GW08DPCJ were rejected (R) as unreliable due to lack of confirmation in the field duplicate analyses and professional judgment. This well must be re-sampled to obtain valid results for these analytes.

Sample SW01DPCJ was identified as a field duplicate of SW01CJ. No non-blank-related, unspiked target analytes were detected in either of the paired field duplicate samples, therefore no quantitative evaluation of precision could be made using these data.

VIII. Internal Standard (IS) Performance

All IS areas and retention times were within documented quality control limits for the reported sample analyses.

IX. Target Compound Identification

All reported target analytes were correctly identified with acceptable supporting mass spectra present in the applicable data packages.

X. Compound Quantitation and Reported Detection Limits

Target compound concentrations and CRQLs were correctly calculated and accurately reported. No dilutions were required for any of the samples.

"J" qualifiers were appropriately applied by the laboratory to the sample Form Is when the concentration of an analyte was less than the sample-specific quantitation limit. Except where superseded by another qualifier (e.g., "U" at the CRQL) these "J" qualifiers were not removed by the validator.

The data tables in Attachment A list all individual sample analyte results, whether or not the value or qualifier was changed as a result of the validation. Sample-specific quantitation limits may be found on the laboratory-generated Form I for each sample (Attachment B) as well as on the data tables.

XI. Tentatively Identified Compounds (TIC)

One TIC (tentatively identified as dimethoxymethane at retention time [RT] 5.29 minutes) was reported in one of the method blanks (VBLKOA) associated with this sample set. This TIC was also reported in the three samples associated with VBLKOA; results for the TIC identified as dimethoxymethane in SW01CJ, SW01DPCJ, and SW04TBCJ were rejected (R) due to the presence of this compound in the associated method blank.

A second TIC, at RT 15.57 minutes and identified only as a laboratory artifact, was reported in SW01DPCJ. The mass spectrum indicates that this is a siloxane compound, likely related to column bleed. The TIC reported at RT 15.57 minutes in SW01DPCJ was rejected (R) as an artifact.

XII. System Performance

The GC/MS systems appear to have been working satisfactorily at the time of these analyses, based on review of the available raw data.

XIII. Documentation

All three chain of custody (COC) records applicable to these samples were present in both data packages. The following issues were noted:

- Improper corrections were observed on two of the three COC records. All corrections to these important legal documents must be made by drawing a single line through the incorrect entry, inserting the correct information, and initialing and dating the change. Obliterations and "write-overs" are not legally defensible.

- Volatiles analysis was not requested for GW01CJ and GW02CJ on the COC record, although these analyses were performed by the laboratory. No documentation of client communication with regard to the analyses required for these samples was found in the data package, and no such documentation was found by the laboratory in their files after further investigation at the request of the validator. The data for these two samples were not reviewed during this validation effort.

- An entry by the laboratory stating "pH of all 7" was found on each of the COC records. This is not correct for all parameters, and is inconsistent with the pH information found on the laboratory's receiving logs. For the purposes of this validation, it was assumed that the water batch sheets contained the correct pH values for the samples intended for volatiles analysis.

- Copies of courier airbills were not included in either data package to document the shipment portion of the sample transfers. Airbill numbers, however, were documented on both of the COC records.

- Although this approach is specified by the Quality Assurance Project Plan (QAPP), additional sample volumes provided to facilitate the laboratory's analysis of an MS/MSD pair should not be recorded on the COC as separate samples. Instead, a notation should be made indicating the sample for which extra volume has been provided, with the instruction that this sample be used for the MS/MSD analysis.

MS/MSD analyses are laboratory-initiated quality control; if not for the logistical need to provide sufficient volume for the multiple analyses involved, MS/MSD pairs would never be mentioned on COC documentation.

Sample GW09FBCJ was misidentified by the laboratory throughout the data package for SDG No. J1067 as GW08FBCJ. The Form Is in the raw data section of the data package and in Attachment B to this report were corrected by the validator, and the correct sample identification is used throughout this validation report.

These documentation issues do not directly affect the technical validity of the data generated for these samples, however some of them could be problematic if the data were to be used in litigation.

XIV. Overall Assessment

Results for volatile compounds in the samples reported in SDG Nos. J1067 and K1067 were qualified as follows based on the validation effort:

- Results for acetone in SW04TBCJ, GW08CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (J, UJ) due to unacceptable percent difference values in the associated continuing calibration standards.

- Results for methylene chloride SW01DPCJ and SW04TBCJ were qualified as less than the CRQL (10 U) based on associated method blank contamination.

- Results for acetone in SW01CJ and SW01DPCJ were qualified as less than the CRQL based on associated trip blank contamination and as estimated due to an unacceptable percent difference value in the associated continuing calibration standard (10 UJ).

- Results for cis-1,2-dichloroethene and trichloroethene in GW08CJ and GW08DPCJ were rejected (R) as unreliable due to lack of confirmation in the field duplicate analyses and professional judgment. This well must be re-sampled to obtain valid results for these analytes.

- Results for the TIC identified as dimethoxymethane in SW01CJ, SW01DPCJ, and SW04TBCJ were rejected (R) due to the presence of this compound at a comparable concentration in the associated method blank.

- The TIC reported at RT 15.57 minutes in SW01DPCJ was rejected (R) as a laboratory artifact (column bleed).

All "B" qualifiers, applied by the laboratory to indicate the presence of the analyte in the associated method blank, were removed by the validator. Laboratory-applied "J" qualifiers were not removed by the validator except where superceded by validator-applied qualifiers, as noted above.

Documentation issues observed in the data packages are discussed in Section XIII.

This validation report should be considered part of both data packages for all future distributions of the volatiles data.

TRILLIUM INC.

ATTACHMENT A

DATA TABLES
SDG Nos. J1067 and K1067
Volatiles in Water - Marion Bragg, September 2001

Marion Bragg Landfill - September 2001 - Volatiles in Ground and Surface Waters

Results are in ug/L

Collection Point ==========>		MB-1	MB-1D	MB-2	Field Blank
Sample ID ==========>		GW08CJ	GW08DPCJ	GW07CJ	GW09FBCJ
Lab Sample No. ==========>		J1067-8	J1067-9	J1067-7	J1067-10
Collection Date. ==========>		9/20/01	9/20/01	9/20/01	9/20/01
	CRQL				
Dichlorodifluoromethane	10	10 U	10 U	10 U	10 U
Chloromethane	10	10 U	10 U	10 U	10 U
Vinyl Chloride	10	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U
Trichlorofluoromethane	10	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-tricluoroethane	10	10 U	10 U	10 U	10 U
Acetone	10	10 UJ	10 UJ	10 U	10 UJ
Carbon Disulfide	10	10 U	10 U	10 U	10 U
Methyl acetate	10	10 U	10 U	10 U	10 U
Methylene chloride	10	10 U	10 U	10 U	10 U
trans-1,2-dichloroethene	10	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10	10 U	10 U	10 U	10 U
cis-1,2-dichloroethene	10	R	R	10 U	10 U
2-Butanone	10	10 U	10 U	10 U	10 U
Chloroform	10	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	10	10 U	10 U	10 U	10 U
Cyclohexane	10	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10	10 U	10 U	10 U	10 U
Benzene	10	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10	10 U	10 U	10 U	10 U
Trichloroethene	10	R	R	10 U	10 U
Methylcyclohexane	10	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10	10 U	10 U	10 U	10 U
Bromodichloromethane	10	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	10 U
Toluene	10	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10	10 U	10 U	10 U	10 U
Tetrachloroethene	10	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U
Dibromochloromethane	10	10 U	10 U	10 U	10 U
1,2-Dibromoethane	10	10 U	10 U	10 U	10 U
Chlorobenzene	10	10 U	10 U	10 U	10 U
Ethylbenzene	10	10 U	10 U	10 U	10 U
Total Xylenes	10	10 U	10 U	10 U	10 U
Styrene	10	10 U	10 U	10 U	10 U
Bromoform	10	10 U	10 U	10 U	10 U
Isopropylbenzene	10	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	10	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	10	10 U	10 U	10 U	10 U

Marion Bragg Landfill - September 2001 - Volatiles in Ground and Surface Waters

Results are in ug/L

Collection Point ==========>		Trip Blank	SW-1	SW-1D	Trip Blank
Sample ID ==========>		GW10TBCJ	SW01CJ	SW01DPCJ	SW04TBCJ
Lab Sample No. ==========>		J1067-11	K1067-1	K1067-2	K1067-5
Collection Date. ==========>		9/20/01	9/19/01	9/19/01	9/19/01
	CRQL				
Dichlorodifluoromethane	10	10 U	10 U	10 U	10 U
Chloromethane	10	10 U	10 U	10 U	10 U
Vinyl Chloride	10	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U
Trichlorofluoromethane	10	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-tricluoroethane	10	10 U	10 U	10 U	10 U
Acetone	10	10 U	10 UJ	10 UJ	6 J
Carbon Disulfide	10	10 U	10 U	10 U	10 U
Methyl acetate	10	10 U	10 U	10 U	10 U
Methylene chloride	10	10 U	10 U	10 U	10 U
trans-1,2-dichloroethene	10	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10	10 U	10 U	10 U	10 U
cis-1,2-dichloroethene	10	10 U	10 U	10 U	10 U
2-Butanone	10	10 U	10 U	10 U	10 U
Chloroform	10	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	10	10 U	10 U	10 U	10 U
Cyclohexane	10	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10	10 U	10 U	10 U	10 U
Benzene	10	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10	10 U	10 U	10 U	10 U
Trichloroethene	10	10 U	10 U	10 U	10 U
Methylcyclohexane	10	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10	10 U	10 U	10 U	10 U
Bromodichloromethane	10	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	10 U
Toluene	10	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10	10 U	10 U	10 U	10 U
Tetrachloroethene	10	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U
Dibromochloromethane	10	10 U	10 U	10 U	10 U
1,2-Dibromoethane	10	10 U	10 U	10 U	10 U
Chlorobenzene	10	10 U	10 U	10 U	10 U
Ethylbenzene	10	10 U	10 U	10 U	10 U
Total Xylenes	10	10 U	10 U	10 U	10 U
Styrene	10	10 U	10 U	10 U	10 U
Bromoform	10	10 U	10 U	10 U	10 U
Isopropylbenzene	10	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	10	10 U	10 U	10 U	10 U
1,2,3-Trichlorobenzene	10	10 U	10 U	10 U	10 U

TRILLIUM INC.

DATA VALIDATION

FOR

MARION BRAGG LANDFILL
MARION, INDIANA

ORGANIC ANALYSIS DATA
Semivolatiles in Water

SDG Nos. J1067 and K1067

Chemical Analyses Performed by:
CompuChem Environmental
Cary, North Carolina

FOR

O & M, Inc.
Danville, Indiana

BY

Trillium, Inc.
356 Farragut Crossing Drive
Knoxville, Tennessee 37922
(865) 966-8880

November 5, 2001

TRILLIUM INC.

EXECUTIVE SUMMARY

Validation of the semivolatile organics analysis data prepared by CompuChem Environmental for 14 water samples and one field blank from the Marion Bragg Landfill site in Marion, Indiana, has been completed by Trillium, Inc. The data were reported by the laboratory in two data packages under Sample Delivery Group (SDG) Nos. J1067 and K1067, which were received for review on October 3, 2001. The following samples were reported:

SDG No. J1067:

GW08CJ (MB-1)	GW08DPCJ (MB-1D)	GW07CJ (MB-2)
GW03CJ (MB-5)	GW04CJ (MB-6)	GW05CJ (MB-7)
GW06CJ (MB-8)	GW02CJ (MB-9)	GW01CJ (MB-10)
GW09FBCJ (Field Blank)		

SDG No. K1067:

PW01CJ (PW-1)	SW01CJ (SW-1)	SW01DPCJ (SW-1D)
SW02CJ (SW-5)	SW03CJ (SW-6)	

Sample GW09FBCJ was misidentified as GW08FBCJ by the laboratory throughout the data package for SDG No. J1067. The correct sample identification, consistent with the chain of custody entry, is listed above and is used throughout this validation report.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for atrazine in all of the samples in this data set were rejected (R).
- Results for 2,4-dinitrophenol in SW02CJ, GW04CJ, GW07CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (UJ).
- The result for bis(2-ethylhexyl)phthalate in SW01DPCJ was qualified as less than the sample-specific contract required quantitation limit (CRQL) and as estimated (10 UJ).
- Sample-specific CRQLs for samples GW03CJ, GW04CJ, GW01CJ, GW09FBCJ, PW01CJ, and SW03CJ were adjusted by the validator as listed in Section XI.
- The reported identification for the peak at RT 16.23 minutes in GW06CJ was corrected to *coeluting substituted aromatics* (from "2,4-dichloro-1-(trichloro-

methyl)benzene") and the "N" qualifier applied to this result by the laboratory was removed.

- The reported identification for the peak at RT 17.71 minutes in GW06CJ was corrected to *coeluting substituted aromatics* (from "unknown").

- The complete compound name for the peak at RT 17.94 minutes in GW04CJ [4,4'-(1-methylethylidene)bis-phenol] was added to the Form I-TIC for this sample.

- The complete compound name for the peak at RT 16.67 minutes (1,4,5,6,7,7-hexachloro-bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid) in GW06CJ was added to the Form I-TIC for this sample.

Brief explanations of the reasons for the actions taken above may be found in the Overall Assessment (Section XV). Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

Documentation issues are discussed in Section XIV.

This validation report should be considered part of both data packages for all future distributions of the semivolatiles data.

INTRODUCTION

Analyses were performed according to the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organics Analyses OLM04.2. Results of sample analyses are reported by the laboratory as either qualified or unqualified; various qualifier codes are used to denote specific information regarding the analytical results.

Validation was performed in conformance with the USEPA "Contract Laboratory Program National Functional Guidelines for Organic Data Review" (EPA 540/R-99/008, 10/99). The EPA Region II Standard Operating Procedure HW-6 (Rev 11), "Evaluation of Organics Data for the CLP," (6/96) was also considered during the evaluation and professional judgment was applied as necessary and appropriate.

The data validation process is intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the CLP. An initial assumption is that each data package is presented in accordance with the CLP requirements. It is also assumed that each data package represents the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

During the validation process, laboratory data are verified against all available supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data validator. Validated results are, therefore, either qualified or unqualified. Unqualified results mean that the reported values may be used without reservation. Final validated results are annotated with the following codes in accordance with the National Functional Guidelines:

U - The material was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified, and the results are therefore unusable.

These codes are recorded on the customized data tables contained in Attachment A and the Organic Analysis Data Sheets (Form Is) in Attachment B of this validation report to indicate qualifications placed on the data as a result of the review.

Two facts should be noted by all data users. First, **the "R" qualifier means that the laboratory-reported value is unusable.** In other words, due to significant quality control problems, the analysis is invalid and provides no information as to whether the analyte is present or not. Rejected values should not appear on data tables because they cannot be relied upon, even as a last resort. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** Strict quality control conformance serves only to increase confidence in reported results; any analytical result will always contain some error.

The data user is also cautioned that the validation effort is based on the raw data printouts as provided by the laboratory. Software manipulation cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

I. Holding Times, Preservation and Sample Integrity

The samples were collected September 19-20, 2001. Sample extractions were performed on September 24 and 26, 2001, which is within the established (seven days from collection) holding time for all samples. Analyses were performed September 25-27, 2001, well within the required holding time of 40 days from extraction. Therefore, all holding times were met.

An acceptable (4°C ±2°C) cooler temperature (5°C) on receipt at the laboratory was recorded on all three COC records applicable to these samples. The same temperature was also recorded on the laboratory's receiving logs in both data packages.

Sampler notations on each COC indicate that the samples for semivolatiles analysis were iced. The narrative in each data package further states that all samples were received intact and properly refrigerated.

II. GC/MS Instrument Performance Checks

Five decafluorotriphenylphosphine (DFTPP) instrument performance checks were run, representing every shift (12-hour period) on each instrument during which samples or associated standards were analyzed. Results for all five instrument performance checks were acceptable.

III. Calibration

Analyses were performed on a single gas chromatograph/mass spectrometer (GC/MS) system identified as 5972HP66 (HP66). One or more target analytes required manual integration by the analyst in most of the standards associated with these samples. Documentation of each integration performed by the laboratory was provided in the data package; all manual integrations were correctly performed and accurately transcribed to the applicable quantitation report. One internal standard (acenaphthene-d_{10}) was manually integrated in one continuing calibration standard and one surrogate compound (1,2-dichlorobenzene-d_4) was manually integrated in all of the initial and continuing calibration standards as well as most of the sample analyses. These integrations were all fully documented and verified to be acceptable.

A. Initial Calibration (IC)

One IC (8/23/01 on HP66) was performed in support of the reported sample analyses. Documentation of all individual IC standards analyzed was present in both data packages and average relative response factor (RRF) as well as percent relative standard deviation (%RSD) values were correctly calculated and accurately reported. All average RRFs were above the minimum response criterion (0.05) and all %RSDs were below the maximum acceptance criterion of 30% except for benzaldehyde (47.8%) and atrazine (103.4%). Atrazine was not detected in any of the site samples;

therefore, results for atrazine in all of the samples in this data set were rejected (R) due to the excessively high %RSD value for this analyte (>90%).

The average RRF for benzaldehyde was acceptable in the IC, this compound was not detected in any of the associated samples, and the %RSD did not grossly exceed the acceptance criterion (i.e., was not greater than 50%). Therefore, no action was taken based on the elevated %RSD for this target analyte.

B. Continuing Calibration (CC)

Sample analyses were performed under four CC standards. Documentation of each CC standard was present in the applicable data package(s) and RRF as well as percent difference (%D) values were correctly calculated and accurately reported in all cases.

All RRFs were above the 0.05 minimum criterion in all of the CC standards. The following %D values were above the maximum acceptance criterion (25%):

9/25/01-09:29:	2,2'-oxybis(1-chloropropane) - 27.7% 4-nitrophenol - 30.1% bis(2-ethylhexyl)phthalate - 30.6% di-n-octylphthalate - 27.8%
9/25/01-21:44:	4-nitrophenol - 26.7% 4,6-dinitro-2-methylphenol - 25.5% 2,4,6-tribromophenol (surrogate) - 27.8%
9/26/01-10:27:	2,4-dinitrophenol - 53.9% 4-nitrophenol - 34.3% pentachlorophenol - 38.1%
9/27/01-08:33:	hexachlorocyclopentadiene - 31.4% 2,4-dinitrophenol - 40.7% 4-nitrophenol - 36.9%

Results for 2,4-dinitrophenol in SW02CJ, GW04CJ, GW07CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (UJ) because the %D value for this compound in the associated CC standard substantially exceeded the maximum acceptance criterion (i.e., was greater than 50%).

The result for bis(2-ethylhexyl)phthalate in SW01DPCJ was qualified as estimated (J) because this compound was detected in this sample and the %D value exceeded the acceptance criterion in the associated CC standard.

No positive values were reported for the remaining target analytes listed above in the samples associated with the affected CCs, the RRFs were all acceptable (i.e., were greater than 0.05) in the

affected CC standards, and the %Ds were not substantially above the acceptance criterion (i.e., were not greater than 50%). In addition, no recovery problems were observed for the 2,4,6-tribromophenol surrogate in the associated sample analyses. Therefore, no additional qualifiers were applied based on the CC standard results.

IV. Blanks

Two laboratory method blanks (MBs: SBLKPC and SBLKPY) were prepared and analyzed with the samples in this data set. No target analytes or tentatively identified compounds (TICs) were detected in either MB.

One field blank (GW09FBCJ) was submitted with the samples in this data set. Butylbenzylphthalate (1 µg/L) was detected in the field blank. This target analyte was not detected in any of the associated samples, therefore no action was warranted on this basis. No TICs were detected in GW09FBCJ.

V. Surrogate Recoveries

Recoveries of the eight surrogate compounds in all site samples, spiked samples, and blanks were correctly calculated, accurately reported, and within acceptable limits with the exception of 2-fluorobiphenyl (QC 43-116%) in SBLKPC (42%), SW01CJMSD (39%), SW01CJ (38%), SW-1DPCJ (41%), SW02CJ (34%), SW03CJ (41%), PW01CJ (41%), GW03CJ (37%), GW04CJ (35%), GW05CJ (40%), and GW07CJ (33%). Since only one surrogate recovery was outside the acceptance limits in each of these analyses, no sample results warranted qualification on this basis.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Sample GW08CJ was prepared and analyzed as an MS/MSD pair. Percent recoveries (%Rs) and relative percent differences (RPDs) between paired recoveries were correctly calculated, accurately reported, and within the acceptance limits documented on Form 3 for all spiked analyses.

Sample SW01CJ was also prepared and analyzed as an MS/MSD pair. Percent recoveries and RPDs between paired recoveries were correctly calculated, accurately reported, and within the acceptance limits documented on Form 3 except for the recovery of acenaphthene in the MSD (43%; QC 46-118%). Since at least one recovery for this analyte was within the acceptance limits and acenaphthene was not detected in the unspiked sample, no action was taken on this basis.

No TICs were found in any of the three analyses of either sample.

bis(2-Ethylhexyl)phthalate was detected at very low concentrations in the MS (2.4 µg/L) and MSD (1.2 µg/L) analyses of GW08CJ and in the MS analysis (2.3 µg/L) analysis of SW01CJ, but was not found in the original analysis of either sample (10 U). No action was warranted on this basis.

VII. Laboratory Control Sample

No laboratory control sample was analyzed in association with the samples in either data package.

VIII. Field Duplicates

Sample GW08DPCJ was identified as a field duplicate of GW08CJ. No target analytes or TICs were detected in either sample; therefore, no quantitative evaluation of precision could be made using these data.

Sample SW01DPCJ was identified as a field duplicate of SW01CJ. bis(2-Ethylhexyl)phthalate was reported at a low concentration in SW01DPCJ (2 µg/L) but was not found in SW01CJ (10 U). The result for bis(2-ethylhexyl)phthalate in SW01DPCJ was qualified as less than the sample-specific CRQL (10 U) based on this lack of confirmation.

IX. Internal Standard (IS) Performance

All IS areas and retention times were within QC limits for the reported sample analyses.

X. Target Compound Identification

bis(2-Ethylhexyl)phthalate was correctly identified at very low concentrations in several samples in this data set and butylbenzylphthalate was correctly identified in the field blank; acceptable mass spectra were included in the applicable data packages in all cases. No other target analytes were reported in any of the site samples in this data set.

XI. Compound Quantitation and Reported Detection Limits

Target compound concentrations were correctly calculated and accurately reported for all reported sample analyses, including adjustments for the extraction of slightly more or less than 1000 mL of most samples.

In the single case where less than 1000 mL was extracted (GW08DPCJ), the CRQLs were appropriately adjusted by the laboratory to reflect the effective dilution factor. However, similar

adjustments were not made to the CRQLs to reflect the concentration factors applicable when more than 1000 mL of the sample was extracted. Although lowering the CRQLs under these circumstances is not required by the SOW and reporting the routine CRQLs is not technically incorrect, this adjustment has been made by the laboratory on previous data sets generated for this project. Therefore, to maintain consistency with historical project data, CRQLs for the following samples were adjusted by the validator to reflect extraction of slightly larger sample volumes than specified by the SOW:

Sample ID	Laboratory-Reported CRQLs	Volume Extracted/ Concentration Factor	Validator-Adjusted CRQLs
GW03CJ	10/25 µg/L	1050 mL	10/24 µg/L
GW04CJ	10/25 µg/L	1075 mL	9/23 µg/L
GW01CJ	10/25 µg/L	1050 mL	10/24 µg/L
GW09FBCJ	10/25 µg/L	1075 mL	9/23 µg/L
PW01CJ	10/25 µg/L	1050 mL	10/24 µg/L
SW03CJ	10/25 µg/L	1075 mL	9/23 µg/L

The data tables in Attachment A list all individual sample analyte results, whether or not the value or qualifier was changed as a result of the validation. Sample-specific CRQLs may be found on the laboratory-generated Form I for each sample (Attachment B) and on the data tables.

XII. Tentatively Identified Compounds (TIC)

One to 30 TICs were reported in six of the site samples in this data set; no TICs were found in the remaining samples.

The reported identification for the peak at RT 16.23 minutes in GW06CJ was corrected by the validator to *coeluting substituted aromatics* (from "2,4-dichloro-1-(trichloromethyl)benzene") based on the validator's professional judgment. The "N" qualifier applied to this result by the laboratory was also removed by the validator.

The reported identification for the peak at RT 17.71 minutes in GW06CJ was corrected by the validator to *coeluting substituted aromatics* (from "unknown") based on the validator's professional judgment.

The complete compound name for the peak at RT 17.94 minutes in GW04CJ [4,4'-(1-methylethylidene)bis-phenol] was added to the Form I-TIC for this sample by the validator.

The complete compound name for the peak at RT 16.67 minutes (1,4,5,6,7,7-hexachloro-bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid) in GW06CJ was added to the Form I-TIC for this sample by the validator.

One or more straight-chain or cyclic alkanes were also detected in two of the site samples. These were reported separately by the laboratory, as required by the CLP SOW.

All reported TICs were appropriately qualified as "J" by the laboratory to emphasize that these are *estimated* concentrations. Those TICs that were appropriately identified as a specific compound based on the library search were also qualified as "N" to emphasize that these are *tentative* identifications. These "J" and "N" qualifiers were not removed by the validator.

The Form I-TIC and (where applicable) the Alkane Narrative Report for each sample, as reported by the laboratory and with qualifiers and corrections noted as described above, are included in Attachment B to this report.

XIII. System Performance

The analytical system appears to have been working within method specifications at the time of these analyses, based on evaluation of the available raw data.

XIV. Documentation

The samples reported in J1067 and K1067 were recorded on three chain of custody (COC) records, all of which were included in both data packages. The following issues were noted:

- Improper corrections were observed on two of the three COC records. All corrections to these important legal documents must be made by drawing a single line through the incorrect entry, inserting the correct information, and initialing and dating the change. Obliterations and "write-overs" are not legally defensible.

- Copies of courier airbills were not included in either data package to document the shipment portion of the sample transfers. Airbill numbers, however, were documented on all of the COC records.

- Although this approach is specified by the Quality Assurance Project Plan (QAPP), additional sample volumes provided to facilitate the laboratory's analysis of an MS/MSD pair should not be recorded on the COC as separate samples. Instead, a notation should be made indicating the sample for which extra volume has been provided, with the instruction that this sample be used for the MS/MSD analysis. MS/MSD analyses are laboratory-initiated quality control; if not for the logistical need

to provide sufficient volume for the multiple analyses involved, MS/MSD pairs would never be mentioned on COC documentation.

Sample GW09FBCJ was misidentified as GW08FBCJ by the laboratory throughout the data package for SDG No. J1067. The Form Is in the raw data section of the data package and in Attachment B to this report were corrected by the validator, and the correct sample identification is used throughout this validation report.

These documentation issues do not directly affect the technical validity of the data generated for these samples, however some of them could be problematic if the data were to be used in litigation.

XV. Overall Assessment

Sample results were determined to be valid as reported with the following exceptions:

- Results for atrazine in all of the samples in this data set were rejected (R) due to an excessively high %RSD value for this analyte in the associated initial calibration.
- Results for 2,4-dinitrophenol in SW02CJ, GW04CJ, GW07CJ, GW08DPCJ, and GW09FBCJ were qualified as estimated (UJ) due to an excessively high percent difference value in the associated continuing calibration standard.
- The result for bis(2-ethylhexyl)phthalate in SW01DPCJ was qualified as less than the sample-specific CRQL based on lack of confirmation in the field duplicate analyses and as estimated based on an unacceptably high percent difference value in the associated continuing calibration standard (10 UJ).
- To maintain consistency with historical project data, sample-specific CRQLs for samples GW03CJ, GW04CJ, GW01CJ, GW09FBCJ, PW01CJ, and SW03CJ were adjusted by the validator as listed in Section XI to reflect the effective concentration factors applicable because more than 1000 mL of each sample was extracted.
- The reported identification for the peak at RT 16.23 minutes in GW06CJ was corrected by the validator to *coeluting substituted aromatics* (from 2,4-dichloro-1-(trichloromethyl)benzene) based on the validator's professional judgment. The "N" qualifier applied to this result by the laboratory was also removed by the validator.
- The reported identification for the peak at RT 17.71 minutes in GW06CJ was corrected by the validator to *coeluting substituted aromatics* (from "unknown") based on the validator's professional judgment.

- The complete compound name for the peak at RT 17.94 minutes in GW04CJ [4,4'-(1-methylethylidene)bis-phenol] was added to the Form I-TIC for this sample by the validator.

- The complete compound name for the peak at RT 16.67 minutes (1,4,5,6,7,7-hexachloro-bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid] in GW06CJ was added to the Form I-TIC for this sample by the validator.

Documentation issues are discussed in Section XIII.

This validation report should be considered part of both data packages for all future distributions of the semivolatiles data.

TRILLIUM INC.

ATTACHMENT A

DATA TABLES
SDG Nos. J1067 and K1067
Semivolatiles in Water
Marion Bragg Landfill - September 2001

Marion Bragg Landfill - September 2001 Semivolatiles in Ground and Surface Waters

Results are in ug/L

Collection Point ==========>		MB-1	MB-1D	MB-2	MB-5	MB-6	MB-7	MB-8	MB-9
Sample ID ==========>		GW08CJ	GW08DPCJ	GW07CJ	GW03CJ	GW04CJ	GW05CJ	GW06CJ	GW02CJ
Lab Sample No. ==========>		J1067-8	J1067-9	J1067-7	J1067-3	J1067-4	J1067-5	J1067-6	J1067-2
Collection Date ==========>		9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/19/01
Concentration/Dilution Factor ==========>		1.00	1.03	1.00	0.95	0.93	0.98	1.00	1.00
	CRQL								
Benzaldehyde	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Phenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Methylphenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Acetophenone	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Methylphenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Chloroaniline	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Caprolactam	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
1,1'-Biphenyl	10	25 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2-Nitroaniline	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
3-Nitroaniline	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
Acenaphthene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4-Dinitrophenol	25	25 U	26 UJ	25 UJ	24 U	23 UJ	25 U	25 U	25 U
4-Nitrophenol	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
Dibenzofuran	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Diethylphthalate	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Nitroaniline	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
N-nitrosodiphenylamine	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Atrazine	10	R	R	R	R	R	R	R	R
Pentachlorophenol	25	25 U	26 U	25 U	24 U	23 U	25 U	25 U	25 U
Phenanthrene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Carbazole	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Butylbenzylphthalate	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	10 U	10 U	1 J	10 U	9 U	10 U	1 J	10 U
Di-n-octylphthalate	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	9 U	10 U	10 U	10 U

Marion Bragg Landfill - September 2001 Semivolatiles in Ground and Surface Waters

Results are in ug/L

Collection Point ⟶		MB-10	Field Blank	PW-1	SW-1	SW-1D	SW-5	SW-6
Sample ID ⟶		GW01CJ	GW09FBCJ	PW01CJ	SW01CJ	SW01DPCJ	SW02CJ	SW03CJ
Lab Sample No. ⟶		J1067-1	J1067-10	K1067-6	K1067-1	K1067-2	K1067-3	K1067-7
Collection Date ⟶		9.19/01	9/20/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01
Concentration/Dilution Factor ⟶		0.95	0.93	0.95	0.98	0.98	1.00	0.93
	CRQL							
Benzaldehyde	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Phenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
bis(2-Chloroethyl)ether	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Chlorophenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Methylphenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,2 -oxybis(1-Chloropropane)	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Acetophenone	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Methylphenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
N-Nitroso-di-n-propylamine	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Hexachloroethane	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Nitrobenzene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Isophorone	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Nitrophenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4-Dimethylphenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
bis(2-Chloroethoxy)methane	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4-Dichlorophenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Naphthalene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Chloroaniline	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Hexachlorobutadiene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Caprolactam	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Chloro-3-methylphenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Methylnaphthalene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Hexachlorocyclopentadiene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4,6-Trichlorophenol	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4,5-Trichlorophenol	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
1,1'-Biphenyl	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Chloronaphthalene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2-Nitroaniline	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
Dimethylphthalate	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,6-Dinitrotoluene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Acenaphthylene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
3-Nitroaniline	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
Acenaphthene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4-Dinitrophenol	25	24 U	23 UJ	24 U	25 U	25 U	25 UJ	23 U
4-Nitrophenol	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
Dibenzofuran	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
2,4-Dinitrotoluene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Diethylphthalate	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Fluorene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Chlorophenyl-phenylether	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Nitroaniline	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
4,6-Dinitro-2-methylphenol	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
N-nitrosodiphenylamine	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
4-Bromophenyl-phenylether	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Hexachlorobenzene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Atrazine	10	R	R	R	R	R	R	R
Pentachlorophenol	25	24 U	23 U	24 U	25 U	25 U	25 U	23 U
Phenanthrene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Anthracene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Carbazole	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Di-n-butylphthalate	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Fluoranthene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Pyrene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Butylbenzylphthalate	10	10 U	1 J	10 U	10 U	10 U	10 U	9 U
3,3'-Dichlorobenzidine	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Benzo(a)anthracene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Chrysene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
bis(2-Ethylhexyl)phthalate	10	1 J	9 U	10 U	10 U	10 UJ	1 J	9 U
Di-n-octylphthalate	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Benzo(b)fluoranthene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Benzo(k)fluoranthene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Benzo(a)pyrene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Indeno(1,2,3-cd)pyrene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Dibenzo(a,h)anthracene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U
Benzo(g,h,i)perylene	10	10 U	9 U	10 U	10 U	10 U	10 U	9 U

TRILLIUM INC.

ATTACHMENT B

ORGANIC ANALYSIS DATA SHEETS (Form Is)
SDG Nos. J1067 and K1067
Semivolatiles in Water
Marion Bragg Landfill -September 2001

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08CJ MB-1 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 1000 (g/mL) ML Lab File ID: J1067-8B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08CJ MB-1 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 1000 (g/mL) ML Lab File ID: J1067-8B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW08CJ
MB-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 1000 (g/mL) ML Lab File ID: J1067-8B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08DPCJ
MB-1D
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 975 (g/mL) ML Lab File ID: J1067-9A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	26	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	26	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	26	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08DPCJ
MB-1D
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 975 (g/mL) ML Lab File ID: J1067-9A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	26	U UJ
100-02-7	4-Nitrophenol	26	U CAE 11/5/01
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	26	U
534-52-1	4,6-Dinitro-2-methylphenol	26	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 26	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW08DPCJ
MB-1D
CAE 10/30/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 975 (g/mL) ML Lab File ID: J1067-9A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW07CJ MB-2 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-7JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW07CJ
MB-2
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-7JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	J UJ CAE 11/5/01
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	1	J
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

TRILLIUM INC.

ATTACHMENT B

ORGANIC ANALYSIS DATA SHEETS (Form I)
SDG Nos. J1067 and K1067
Volatiles in Water - Marion Bragg, September 2001

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08CJ MB-1 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-8RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10	UJ CAE 10/29/01
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	R ~~10~~	~~U~~
78-93-3	2-Butanone	CAE 10/29/01 10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
GW08CJ MB-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-8RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	~~10~~ R	~~U~~
108-87-2	Methylcyclohexane	10 CAE 10/29/01	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW08CJ MB-1 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-8

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-8RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08DPCJ
MB-1D
CAE 10/2n/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-9RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10	U J
75-15-0	Carbon Disulfide	10	U CAE 10/2n/01
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	R ~~19~~	
78-93-3	2-Butanone	CAE 10/2n/01 10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08DPCJ
MB-1D
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-9RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
79-01-6	Trichloroethene	R	~~45~~	
108-87-2	Methylcyclohexane	CAE 10/29/01	10	U
78-87-5	1,2-Dichloropropane		10	U
75-27-4	Bromodichloromethane		10	U
10061-01-5	cis-1,3-Dichloropropene		10	U
108-10-1	4-Methyl-2-Pentanone		10	U
108-88-3	Toluene		10	U
10061-02-6	trans-1,3-Dichloropropene		10	U
79-00-5	1,1,2-Trichloroethane		10	U
127-18-4	Tetrachloroethene		10	U
591-78-6	2-Hexanone		10	U
124-48-1	Dibromochloromethane		10	U
106-93-4	1,2-Dibromoethane		10	U
108-90-7	Chlorobenzene		10	U
100-41-4	Ethylbenzene		10	U
1330-20-7	Xylene (Total)		10	U
100-42-5	Styrene		10	U
75-25-2	Bromoform		10	U
98-82-8	Isopropylbenzene		10	U
79-34-5	1,1,2,2-Tetrachloroethane		10	U
541-73-1	1,3-Dichlorobenzene		10	U
106-46-7	1,4-Dichlorobenzene		10	U
95-50-1	1,2-Dichlorobenzene		10	U
96-12-8	1,2-Dibromo-3-Chloropropane		10	U
120-82-1	1,2,4-Trichlorobenzene		10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW08DPCJ
MB-1D

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

CAE 10/29/01

Matrix: (soil/water) WATER Lab Sample ID: J1067-9

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-9RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW07CJ
MB-2
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-7B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW07CJ MB-2

CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-7B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW07CJ
MB-2
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-7B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-10RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10	U J CAE 10/30/01
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/2/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-10RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-10RB55

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/27/01

GC Column: EQUITY624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

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	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW10TBCJ
Trip Blank
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-11

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-11A59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW10TBCJ
Trip Blank
Case 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-11

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-11A59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW10TBCJ
Trip Blank
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-11

Sample wt/vol: 5 (g/mL) ML Lab File ID: J1067-11A59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/26/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-1R2B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
75-71-8	Dichlorodifluoromethane		10	U
74-87-3	Chloromethane		10	U
75-01-4	Vinyl Chloride		10	U
74-83-9	Bromomethane		10	U
75-00-3	Chloroethane		10	U
75-69-4	Trichlorofluoromethane		10	U
75-35-4	1,1-Dichloroethene		10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane		10	U
67-64-1	Acetone	10	~~8~~	~~J~~ ✓ UJ
75-15-0	Carbon Disulfide	CAErikson 10/29/01	10	U
79-20-9	Methyl Acetate		10	U
75-09-2	Methylene Chloride		10	U
156-60-5	trans-1,2-Dichloroethene		10	U
1634-04-4	Methyl tert-Butyl Ether		10	U
75-34-3	1,1-Dichloroethane		10	U
156-59-2	cis-1,2-Dichloroethene		10	U
78-93-3	2-Butanone		10	U
67-66-3	Chloroform		10	U
71-55-6	1,1,1-Trichloroethane		10	U
110-82-7	Cyclohexane		10	U
56-23-5	Carbon Tetrachloride		10	U
71-43-2	Benzene		10	U
107-06-2	1,2-Dichloroethane		10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-1R2B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-1R2B59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	~~109-87-5~~	~~METHANE, DIMETHOXY~~	~~5.30~~	~~6~~	~~NJB~~ R
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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01DPCJ
SW-1D
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-2RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	10 ~~9~~ ~~3~~	UJ
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate (CAE 10/24/01)	10	U
75-09-2	Methylene Chloride	10 ~~2~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	10	U
1634-04-4	Methyl tert-Butyl Ether	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01DPCJ
SW-LD
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-2RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SW01DPCJ
SW-1D
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-2RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	~~109-87-5~~	~~METHANE, DIMETHOXY-~~	~~5.28~~	~~7~~	~~NJB~~ R
2.		~~LABORATORY ARTIFACT~~	~~15.57~~	~~6~~	~~J~~ R
3.					CAE 10/29/01
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW04TBCJ
Trip Blank
CQE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-5RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
75-69-4	Trichlorofluoromethane	10	U
75-35-4	1,1-Dichloroethene	10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
79-20-9	Methyl Acetate	10	U
75-09-2	Methylene Chloride	10 ~~3~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	CQE 10	U
1634-04-4	Methyl tert-Butyl Ether	11/29/01 10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	10	U
71-55-6	1,1,1-Trichloroethane	10	U
110-82-7	Cyclohexane	10	U
56-23-5	Carbon Tetrachloride	10	U
71-43-2	Benzene	10	U
107-06-2	1,2-Dichloroethane	10	U

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW04TBCJ
Trip Blank
Cal 10/04/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-5RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	10	U
108-87-2	Methylcyclohexane	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
1330-20-7	Xylene (Total)	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U
98-82-8	Isopropylbenzene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1F

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SW04TBCJ
Trip Blank
CAS 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-5

Sample wt/vol: 5 (g/mL) ML Lab File ID: K1067-5RB59

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: not dec. _____ Date Analyzed: 09/25/01

GC Column: DB624 ID: 0.32 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	~~109-87-5~~	~~METHANE, DIMETHOXY-~~	~~5.30~~	~~6~~	NJB R
2.					CAS 10/29/01
3.					
4.					
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1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW07CJ
MB-2
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-7

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-7JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	57-10-3	HEXADECANOIC ACID	16.22	2	NJ
2.	10544-50-0	SULFUR, MOL. (S8)	17.29	10	NJ
3.		UNKNOWN	17.61	7	J
4.		UNKNOWN	21.92	5	J
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW03CJ
MB-5
CAE 10/30/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-3

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-3B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	24 ~~25~~	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	24 ~~25~~	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	24 ~~25~~	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW03CJ MB-5 CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-3

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-3B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	24 ~~25~~	U
100-02-7	4-Nitrophenol	24 ~~25~~	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	24 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	24 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	24 ~~25~~	U
85-01-8	Phenanthrene	CAErikson 11/5/01 10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW03CJ
MB-5
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-3

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-3B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW04CJ
MB-6
CAE 10/30/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-4

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-4JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	9 ~~10~~	U
108-95-2	Phenol	~~10~~	U
111-44-4	bis(2-Chloroethyl)ether	~~10~~	U
95-57-8	2-Chlorophenol	~~10~~	U
95-48-7	2-Methylphenol	~~10~~	U
108-60-1	2,2'-oxybis(1-Chloropropane)	~~10~~	U
98-86-2	Acetophenone	~~10~~	U
106-44-5	4-Methylphenol	~~10~~	U
621-64-7	N-Nitroso-di-n-propylamine	~~10~~	U
67-72-1	Hexachloroethane	~~10~~	U
98-95-3	Nitrobenzene	~~10~~	U
78-59-1	Isophorone	~~10~~	U
88-75-5	2-Nitrophenol	~~10~~	U
105-67-9	2,4-Dimethylphenol	~~10~~	U
111-91-1	bis(2-Chloroethoxy)methane	~~10~~	U
120-83-2	2,4-Dichlorophenol	~~10~~	U
91-20-3	Naphthalene	~~10~~	U
106-47-8	4-Chloroaniline	~~10~~	U
87-68-3	Hexachlorobutadiene	~~10~~	U
105-60-2	Caprolactam	~~10~~	U
59-50-7	4-Chloro-3-methylphenol	~~10~~	U
91-57-6	2-Methylnaphthalene	~~10~~	U
77-47-4	Hexachlorocyclopentadiene	~~10~~	U
88-06-2	2,4,6-Trichlorophenol	~~10~~	U
95-95-4	2,4,5-Trichlorophenol	23 ~~24~~ ~~25~~	U
92-52-4	1,1'-Biphenyl	9 ~~10~~	U
91-58-7	2-Chloronaphthalene	9 ~~10~~	U
88-74-4	2-Nitroaniline	23 ~~25~~	U
131-11-3	Dimethylphthalate	9 ~~10~~	U
606-20-2	2,6-Dinitrotoluene	~~10~~	U
208-96-8	Acenaphthylene	~~10~~	U
99-09-2	3-Nitroaniline	23 ~~25~~	U
83-32-9	Acenaphthene	9 ~~10~~	U

CAErikson 11/5/01

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW04CJ
MB-6
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-4

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-4JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	23 ~~25~~	~~U~~ UJ
100-02-7	4-Nitrophenol	23 ~~25~~	U
132-64-9	Dibenzofuran	9 ~~10~~	U
121-14-2	2,4-Dinitrotoluene	~~10~~	U
84-66-2	Diethylphthalate	~~10~~	U
86-73-7	Fluorene	~~10~~	U
7005-72-3	4-Chlorophenyl-phenylether	~~10~~	U
100-01-6	4-Nitroaniline	23 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	23 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	9 ~~10~~	U
101-55-3	4-Bromophenyl-phenylether	~~10~~	U
118-74-1	Hexachlorobenzene	~~10~~	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	23 ~~25~~	U
85-01-8	Phenanthrene	9 ~~10~~	U
120-12-7	Anthracene	~~10~~	U
86-74-8	Carbazole	~~10~~	U
84-74-2	Di-n-butylphthalate	~~10~~	U
206-44-0	Fluoranthene	~~10~~	U
129-00-0	Pyrene	~~10~~	U
85-68-7	Butylbenzylphthalate	~~10~~	U
91-94-1	3,3'-Dichlorobenzidine	~~10~~	U
56-55-3	Benzo(a)anthracene	~~10~~	U
218-01-9	Chrysene	~~10~~	U
117-81-7	bis(2-Ethylhexyl)phthalate	~~10~~	U
117-84-0	Di-n-octylphthalate	~~10~~	U
205-99-2	Benzo(b)fluoranthene	~~10~~	U
207-08-9	Benzo(k)fluoranthene	~~10~~	U
50-32-8	Benzo(a)pyrene	~~10~~	U
193-39-5	Indeno(1,2,3-cd)pyrene	~~10~~	U
53-70-3	Dibenzo(a,h)anthracene	~~10~~	U
191-24-2	Benzo(g,h,i)perylene	~~10~~	U

(1) - Cannot be separated from Diphenylamine

CAErikson 11/5/01

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW04CJ
MB-6
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-4

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-4JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	8.77	7	J
2.		UNKNOWN	11.24	2	J
3.	934-34-9	2(3H)-BENZOTHIAZOLONE	14.11	8	NJ
4.		UNKNOWN	17.62	14	J
5.	80-05-7	PHENOL, 4,4'-(1-METHYLETHYLI+	17.94	2	NJ
6.		UNKNOWN	19.31	5	J
7.					
8.					
9.					
10.					
11.		* 4,4'-(1-methylethylidene)bis-phenol			
12.		CAE 11/5/01			
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW05CJ MB-7 CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-5

Sample wt/vol: 1025 (g/mL) ML Lab File ID: J1067-5B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW05CJ
MB-7
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-5

Sample wt/vol: 1025 (g/mL) ML Lab File ID: J1067-5B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	CAE 11/5/01 10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW05CJ
MB-7
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-5

Sample wt/vol: 1025 (g/mL) ML Lab File ID: J1067-5B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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30.					

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW06CJ MB-8 cat 10/30/a

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-6

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-6RA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/26/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/27/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW06CJ MB-8

CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-6

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-6RA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/26/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/27/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	1	J
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW06CJ
MB-8
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-6

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-6RA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/26/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/27/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 30 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.67	2	J
2.		TRICHLOROPROPENE	5.81	4	J
3.		UNKNOWN	6.01	6	J
4.		UNKNOWN	8.78	2	J
5.		UNKNOWN	9.91	3	J
6.		UNKNOWN	10.16	3	J
7.	85-44-9	PHTHALIC ANHYDRIDE	10.59	5	NJ
8.		UNKNOWN	10.82	3	J
9.		UNKNOWN	11.41	3	J
10.		UNKNOWN	11.89	3	J
11.		UNKNOWN	12.21	3	J
12.		UNKNOWN	12.38	8	J
13.		UNKNOWN coeluting substituted aromatics	14.49	3	J
14.		UNKNOWN CAE 11/5/01	14.76	12	J
15.	~~13014-18-1~~	~~BENZENE, 2,4-DICHLORO-1 (TRI~~	16.23	11	~~NJ~~
16.	115-28-6	BICYCLO[2.2.1]HEPT-5-ENE-2,3 *	16.67	11	NJ
17.		UNKNOWN	17.63	18	J
18.		~~UNKNOWN~~ coeluting substituted aromatics	17.71	3	J
19.		UNKNOWN CAE 11/5/01	18.51	3	J
20.		UNKNOWN	19.00	3	J
21.		UNKNOWN	19.05	6	J
22.		UNKNOWN	19.12	5	J
23.		UNKNOWN	19.17	4	J
24.		UNKNOWN	19.54	6	J
25.		UNKNOWN	19.64	4	J
26.		UNKNOWN	20.55	8	J
27.		UNKNOWN	20.62	5	J
28.		UNKNOWN	20.80	3	J
29.		UNKNOWN	21.16	9	J
30.		UNKNOWN	22.26	4	J

* 1,4,5,6,7,7-hexachloro-bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid CAE 11/5/01

ALKANE NARRATIVE REPORT
Report date : 09/28/2001
SDG: J1067

Client Sample ID: GW06CJ Lab Sample ID: J1067-6 File ID: J1067-6RA66

MB-8 CAE 11/5/01

Compound	RT	Est. Conc.	Q
Cyclic Alkane	17.80	5.88	J
Unknown Alkane	20.45	3.66	J
Unknown Alkane	22.54	4.46	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW02CJ
MB-9
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-2

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-2RA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/26/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/27/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW02CJ MB-9 CAE 10/30/01

: COMPUCHEM Contract: OLM04-REVS

LIBRTY Case No.: SAS No.: SDG No.: J1067

(soil/water) WATER Lab Sample ID: J1067-2

t/vol: 500 (g/mL) ML Lab File ID: J1067-2RA66

(low/med) LOW Date Received: 09/21/01

re: _____ decanted: (Y/N)___ Date Extracted: 09/26/01

ated Extract Volume: 500(uL) Date Analyzed: 09/27/01

on Volume: 2.0(uL) Dilution Factor: 1.0

up: (Y/N) N pH: ____ Extraction: (Type) CONT

	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
-5	2,4-Dinitrophenol	25	U
2-7	4-Nitrophenol	25	U
-9	Dibenzofuran	10	U
-2	2,4-Dinitrotoluene	10	U
-2	Diethylphthalate	10	U
3-7	Fluorene	10	U
-3	4-Chlorophenyl-phenylether	10	U
-6	4-Nitroaniline	25	U
2-1	4,6-Dinitro-2-methylphenol	25	U
0-6	N-nitrosodiphenylamine (1)	10	U
-3	4-Bromophenyl-phenylether	10	U
-1	Hexachlorobenzene	10	U
4-9	Atrazine	R ~~10~~	~~U~~
6-5	Pentachlorophenol	25	U
-8	Phenanthrene	CAE 11/5/01 10	U
-7	Anthracene	10	U
4-8	Carbazole	10	U
-2	Di-n-butylphthalate	10	U
-0	Fluoranthene	10	U
-0	Pyrene	10	U
8-7	Butylbenzylphthalate	10	U
-1	3,3'-Dichlorobenzidine	10	U
-3	Benzo(a)anthracene	10	U
-9	Chrysene	10	U
1-7	bis(2-Ethylhexyl)phthalate	10	U
-0	Di-n-octylphthalate	10	U
-2	Benzo(b)fluoranthene	10	U
8-9	Benzo(k)fluoranthene	10	U
2-8	Benzo(a)pyrene	10	U
-5	Indeno(1,2,3-cd)pyrene	10	U
-3	Dibenzo(a,h)anthracene	10	U
4-2	Benzo(g,h,i)perylene	10	U

- Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW02CJ MB-9 CLE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-2

Sample wt/vol: 500 (g/mL) ML Lab File ID: J1067-2RA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/26/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/27/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.67	2	J
2.		TRICHLOROPROPENE	5.82	5	J
3.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW01CJ
MB-10
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-1

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-1B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	24 ~~25~~	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	24 ~~25~~	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	24 ~~25~~	U
83-32-9	Acenaphthene	10	U

CAE 11/5/01

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW01CJ
MB-1D
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-1

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-1B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	11/5/01 24 ~~25~~	U
100-02-7	4-Nitrophenol	24 ~~25~~	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	24 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	24 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	24 ~~25~~	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	1	J
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW01CJ
MB-10
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-1

Sample wt/vol: 1050 (g/mL) ML Lab File ID: J1067-1B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-10A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	9 ~~10~~	U
108-95-2	Phenol	~~10~~	U
111-44-4	bis(2-Chloroethyl)ether	~~10~~	U
95-57-8	2-Chlorophenol	~~10~~	U
95-48-7	2-Methylphenol	~~10~~	U
108-60-1	2,2'-oxybis(1-Chloropropane)	~~10~~	U
98-86-2	Acetophenone	~~10~~	U
106-44-5	4-Methylphenol	~~10~~	U
621-64-7	N-Nitroso-di-n-propylamine	~~10~~	U
67-72-1	Hexachloroethane	~~10~~	U
98-95-3	Nitrobenzene	~~10~~	U
78-59-1	Isophorone	~~10~~	U
88-75-5	2-Nitrophenol	~~10~~	U
105-67-9	2,4-Dimethylphenol	~~10~~	U
111-91-1	bis(2-Chloroethoxy)methane	~~10~~	U
120-83-2	2,4-Dichlorophenol	~~10~~	U
91-20-3	Naphthalene	~~10~~	U
106-47-8	4-Chloroaniline	~~10~~	U
87-68-3	Hexachlorobutadiene	~~10~~	U
105-60-2	Caprolactam	~~10~~	U
59-50-7	4-Chloro-3-methylphenol	~~10~~	U
91-57-6	2-Methylnaphthalene	~~10~~	U
77-47-4	Hexachlorocyclopentadiene	~~10~~	U
88-06-2	2,4,6-Trichlorophenol	~~10~~	U
95-95-4	2,4,5-Trichlorophenol	23 ~~25~~	U
92-52-4	1,1'-Biphenyl	9 ~~10~~	U
91-58-7	2-Chloronaphthalene	9 ~~10~~	U
88-74-4	2-Nitroaniline	23 ~~25~~	U
131-11-3	Dimethylphthalate	9 ~~10~~	U
606-20-2	2,6-Dinitrotoluene	~~10~~	U
208-96-8	Acenaphthylene	~~10~~	U
99-09-2	3-Nitroaniline	23 ~~25~~	U
83-32-9	Acenaphthene	9 ~~10~~	U

CAErikson 11/5/01

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-10A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	23 ~~25~~	~~U~~ UJ
100-02-7	4-Nitrophenol	23 ~~25~~	U
132-64-9	Dibenzofuran	9 ~~10~~	U
121-14-2	2,4-Dinitrotoluene	~~10~~	U
84-66-2	Diethylphthalate	~~10~~	U
86-73-7	Fluorene	~~10~~	U
7005-72-3	4-Chlorophenyl-phenylether	~~10~~	U
100-01-6	4-Nitroaniline	23 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	23 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	9 ~~10~~	U
101-55-3	4-Bromophenyl-phenylether	~~10~~	U
118-74-1	Hexachlorobenzene	~~10~~	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	23 ~~25~~	U
85-01-8	Phenanthrene	9 ~~10~~	U
120-12-7	Anthracene	~~10~~	U
86-74-8	Carbazole	~~10~~	U
84-74-2	Di-n-butylphthalate	~~10~~	U
206-44-0	Fluoranthene	~~10~~	U
129-00-0	Pyrene	~~10~~	U
85-68-7	Butylbenzylphthalate	1	J
91-94-1	3,3'-Dichlorobenzidine	9 ~~10~~	U
56-55-3	Benzo(a)anthracene	~~10~~	U
218-01-9	Chrysene	~~10~~	U
117-81-7	bis(2-Ethylhexyl)phthalate	~~10~~	U
117-84-0	Di-n-octylphthalate	~~10~~	U
205-99-2	Benzo(b)fluoranthene	~~10~~	U
207-08-9	Benzo(k)fluoranthene	~~10~~	U
50-32-8	Benzo(a)pyrene	~~10~~	U
193-39-5	Indeno(1,2,3-cd)pyrene	~~10~~	U
53-70-3	Dibenzo(a,h)anthracene	~~10~~	U
191-24-2	Benzo(g,h,i)perylene	~~10~~	U

(1) - Cannot be separated from Diphenylamine

CAE 11/5/01

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

9
GW08FBCJ
Field Blank
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix: (soil/water) WATER Lab Sample ID: J1067-10

Sample wt/vol: 1075 (g/mL) ML Lab File ID: J1067-10A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PW01CJ
PW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-6

Sample wt/vol: 1050 (g/mL) ML Lab File ID: K1067-6B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	24 ~~25~~	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	24 ~~25~~	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	24 ~~25~~	U
83-32-9	Acenaphthene	10	U

CAE 11/5/01

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PW01CJ
PW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-6

Sample wt/vol: 1050 (g/mL) ML Lab File ID: K1067-6B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	24 ~~25~~	U
100-02-7	4-Nitrophenol	24 ~~25~~	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	24 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	24 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	24 ~~25~~	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

CAE 10/29/01

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

PW01CJ
PW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-6

Sample wt/vol: 1050 (g/mL) ML Lab File ID: K1067-6B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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ALKANE NARRATIVE REPORT
Report date : 09/28/2001
SDG: K1067

Client Sample ID: PW01CJ Lab Sample ID: K1067-6 File ID: K1067-6B66

PW-1

Compound	RT	Est. Conc.	Q
Straight-Chain Alkane C8E 11/5/01	14.08	2.08	J

36
5ft

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-1A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-1A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-1

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-1A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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30.					

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01DPCJ
SW-LD
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-2A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1D

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SW01DPCJ
SW-1D
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-2A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10 ~~2~~	~~J~~ UJ
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	CAE 11/5/01 10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SW01DPCJ
SW-1D
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-2

Sample wt/vol: 1025 (g/mL) ML Lab File ID: K1067-2A66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW02CJ
SW-5
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-3

Sample wt/vol: 500 (g/mL) ML Lab File ID: K1067-3JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	10	U
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
98-86-2	Acetophenone	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
105-60-2	Caprolactam	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
92-52-4	1,1'-Biphenyl	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
606-20-2	2,6-Dinitrotoluene	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

27
27

1D

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SW02CJ
SW-5
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-3

Sample wt/vol: 500 (g/mL) ML Lab File ID: K1067-3JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U UJ
100-02-7	4-Nitrophenol	25	U CAE 11/5/01
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
86-73-7	Fluorene	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	CAE 11/5/01 25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	1	J
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SW02CJ
SW-5
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-3

Sample wt/vol: 500 (g/mL) ML Lab File ID: K1067-3JA66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 500(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		TRICHLOROPROPENE	5.81	3	J
2.					
3.					
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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW03CJ
SW-6
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-7

Sample wt/vol: 1075 (g/mL) ML Lab File ID: K1067-7B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
100-52-7	Benzaldehyde	9 ~~10~~	U
108-95-2	Phenol	~~10~~	U
111-44-4	bis(2-Chloroethyl)ether	~~10~~	U
95-57-8	2-Chlorophenol	~~10~~	U
95-48-7	2-Methylphenol	~~10~~	U
108-60-1	2,2'-oxybis(1-Chloropropane)	~~10~~	U
98-86-2	Acetophenone	~~10~~	U
106-44-5	4-Methylphenol	~~10~~	U
621-64-7	N-Nitroso-di-n-propylamine	~~10~~	U
67-72-1	Hexachloroethane	~~10~~	U
98-95-3	Nitrobenzene	~~10~~	U
78-59-1	Isophorone	~~10~~	U
88-75-5	2-Nitrophenol	~~10~~	U
105-67-9	2,4-Dimethylphenol	~~10~~	U
111-91-1	bis(2-Chloroethoxy)methane	~~10~~	U
120-83-2	2,4-Dichlorophenol	~~10~~	U
91-20-3	Naphthalene	~~10~~	U
106-47-8	4-Chloroaniline	~~10~~	U
87-68-3	Hexachlorobutadiene	~~10~~	U
105-60-2	Caprolactam	~~10~~	U
59-50-7	4-Chloro-3-methylphenol	~~10~~	U
91-57-6	2-Methylnaphthalene	~~10~~	U
77-47-4	Hexachlorocyclopentadiene	~~10~~	U
88-06-2	2,4,6-Trichlorophenol	~~10~~	U
95-95-4	2,4,5-Trichlorophenol	23 ~~25~~	U
92-52-4	1,1'-Biphenyl	9 ~~10~~	U
91-58-7	2-Chloronaphthalene	9 ~~10~~	U
88-74-4	2-Nitroaniline	23 ~~25~~	U
131-11-3	Dimethylphthalate	9 ~~10~~	U
606-20-2	2,6-Dinitrotoluene	~~10~~	U
208-96-8	Acenaphthylene	~~10~~	U
99-09-2	3-Nitroaniline	23 ~~25~~	U
83-32-9	Acenaphthene	9 ~~10~~	U

CAErikson 11/5/01

279
24

1D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW03CJ
SW-6
CAE 10/29/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-7

Sample wt/vol: 1075 (g/mL) ML Lab File ID: K1067-7B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____ Extraction: (Type) CONT

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	23 ~~25~~	U
100-02-7	4-Nitrophenol	23 ~~25~~	U
132-64-9	Dibenzofuran	9 ~~10~~	U
121-14-2	2,4-Dinitrotoluene	~~10~~	U
84-66-2	Diethylphthalate	~~10~~	U
86-73-7	Fluorene	~~10~~	U
7005-72-3	4-Chlorophenyl-phenylether	~~10~~	U
100-01-6	4-Nitroaniline	23 ~~25~~	U
534-52-1	4,6-Dinitro-2-methylphenol	23 ~~25~~	U
86-30-6	N-nitrosodiphenylamine (1)	9 ~~10~~	U
101-55-3	4-Bromophenyl-phenylether	~~10~~	U
118-74-1	Hexachlorobenzene	~~10~~	U
1912-24-9	Atrazine	R ~~10~~	~~U~~
87-86-5	Pentachlorophenol	23 ~~25~~	U
85-01-8	Phenanthrene	9 ~~10~~	U
120-12-7	Anthracene	~~10~~	U
86-74-8	Carbazole	~~10~~	U
84-74-2	Di-n-butylphthalate	~~10~~	U
206-44-0	Fluoranthene	~~10~~	U
129-00-0	Pyrene	~~10~~	U
85-68-7	Butylbenzylphthalate	~~10~~	U
91-94-1	3,3'-Dichlorobenzidine	~~10~~	U
56-55-3	Benzo(a)anthracene	~~10~~	U
218-01-9	Chrysene	~~10~~	U
117-81-7	bis(2-Ethylhexyl)phthalate	~~10~~	U
117-84-0	Di-n-octylphthalate	~~10~~	U
205-99-2	Benzo(b)fluoranthene	~~10~~	U
207-08-9	Benzo(k)fluoranthene	~~10~~	U
50-32-8	Benzo(a)pyrene	~~10~~	U
193-39-5	Indeno(1,2,3-cd)pyrene	~~10~~	U
53-70-3	Dibenzo(a,h)anthracene	~~10~~	U
191-24-2	Benzo(g,h,i)perylene	~~10~~	U

(1) - Cannot be separated from Diphenylamine

CAERIKSON 11/5/01

280
25

1G

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SW03CJ
SW-6
CAE 10/24/01

Lab Name: COMPUCHEM Contract: OLM04-REVS

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix: (soil/water) WATER Lab Sample ID: K1067-7

Sample wt/vol: 1075 (g/mL) ML Lab File ID: K1067-7B66

Level: (low/med) LOW Date Received: 09/21/01

% Moisture: _____ Decanted: (Y/N)___ Date Extracted:09/24/01

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/01

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Extraction: (Type) CONT

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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30.					

DATA VALIDATION

FOR

MARION BRAGG LANDFILL
MARION, INDIANA

INORGANIC ANALYSIS DATA
Dissolved Metals in Water

SDG Nos. J1067 and K1067
Samples Collected September 2001

Chemical Analyses Performed by:

CompuChem Environmental
Cary, North Carolina

FOR

O & M, Inc.
Danville, Indiana

BY

Trillium, Inc.
356 Farragut Crossing Drive
Knoxville, Tennessee 37922
(865) 966-8880

November 5, 2001

92241/CAE/ESC
MARION\Sept01\DMetals

TRILLIUM INC.

EXECUTIVE SUMMARY

Validation of the inorganics analysis data (dissolved metals) prepared by CompuChem Environmental for 14 water samples and one field blank from the Marion Bragg Landfill Site in Marion, Indiana, has been completed by Trillium, Inc. The data were reported by the laboratory in two separate data packages under Sample Delivery Group (SDG) Nos. J1067 and K1067, which were received for review on October 3, 2001. The following samples were reported:

SDG No. J1067:

GW08CJ (MB-1)	GW08DPCJ (MB-1D)	GW07CJ (MB-2)
GW03CJ (MB-5)	GW04CJ (MB-6)	GW05CJ (MB-7)
GW06CJ (MB-8)	GW02CJ (MB-9)	GW01CJ (MB-10)
GW09FBCJ (Field Blank)		

SDG No. K1067:

PW01CJ (PW-1)	SW01CJ (SW-1)	SW01DPCJ (SW-1D)
SW02CJ (SW-5)	SW03CJ (SW-6)	

Sample GW09FBCJ was misidentified as GW08FBCJ by the laboratory throughout the data package for SDG No. J1067. The correct sample identification, consistent with the chain of custody entry, is listed above and is used throughout this validation report.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for cadmium and manganese in GW01CJ were qualified as less than the reported values (U).
- Results for cobalt in GW02CJ, GW03CJ, GW04CJ, GW06CJ were qualified as less than the reported values (U).
- The result for vanadium in GW08CJ was qualified as less than the reported value (U).
- Results for zinc in all samples were qualified as estimated (J, UJ).
- Results for antimony in GW08DPCJ and GW09FBCJ were qualified as estimated (UJ).
- Results for calcium and sodium in GW09FBCJ were qualified as estimated (UJ).
- Results for antimony, cobalt, copper, and vanadium in PW01CJ, SW01CJ, SW01DPCJ, SW02CJ, and SW03CJ were qualified as estimated (J, UJ).

- Results for arsenic in GW08DPCJ, GW01CJ, GW09FBCJ, PW01CJ, SW01CJ, SW01DPCJ, SW02CJ, and SW03CJ were qualified as estimated (J, UJ).
- The result for thallium in GW08CJ was qualified as less than the CRDL (10.0 U).
- The result for nickel in SW01CJ was qualified as less than the CRDL (40.0 U).
- Results for potassium in all samples except GW09FBCJ were qualified as estimated (J).
- The result for cobalt in GW08CJ was qualified as less than the CRDL (50 U).
- The result for selenium in SW01DPCJ was qualified as less than the CRDL (5.0 U).
- The result for chromium in GW02CJ was qualified as estimated (J).
- The result for cobalt in GW07CJ was qualified as estimated (J).
- The result for manganese in PW01CJ was qualified as estimated (J).
- Results for nickel in GW08CJ, GW08DPCJ, GW05CJ, GW01CJ, PW01CJ, and SW02CJ were qualified as estimated (J).
- Results for selenium in PW01CJ and SW03CJ were qualified as estimated (J).
- Results for copper in GW03CJ and for nickel in GW07CJ were qualified as estimated (J).

All "B" and "E" flags applied by the laboratory were removed by the validator.

Brief explanations of the reasons for the actions taken above may be found in the Overall Assessment (Section XIII). Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

Documentation issues are discussed in Section XII of this report.

This validation report should be considered part of both data packages for all future distributions of the inorganics data.

INTRODUCTION

Analyses were performed according to the USEPA Contract Laboratory Program (CLP) Statement of Work ILM04.0. All target analytes (dissolved metals) were analyzed using trace ICP (inductively coupled plasma) and cold vapor atomic absorption (CVAA) instrumentation. Results of analyses are reported by the laboratory as either qualified or unqualified; various qualifier codes denote specific information regarding the analytical results.

Trillium's validation was performed in accordance with the EPA "National Functional Guidelines for Inorganic Data Review" (EPA 540/R-94/013, 2/94). The EPA Region II Standard Operating Procedure (SOP) No. HW-2, (Revision XI), January 1992, "Evaluation of Metals Data for the Contract Laboratory Program (CLP)" was also used as guidance for the validation effort, and professional judgment was applied as necessary and appropriate.

The data validation process is intended to evaluate data on a technical basis rather than a contract compliance basis for chemical analyses conducted under the CLP. An initial assumption is that each data package is presented in accordance with the CLP requirements. It is also assumed that each data package represents the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

During the validation process, laboratory data are verified against all available supporting documentation. Based on the review, qualifier codes may be added, deleted, or modified by the data validator. Validated results are, therefore, either qualified or unqualified. Unqualified results mean that the reported values may be used without reservation. Final validated results are annotated with the following codes as defined by the National Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

R - The data are unusable. (Note: The analyte may or may not be present.)

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are recorded on the customized data tables contained in Attachment A as well as on the Inorganic Analysis Data Sheets (Form Is) in Attachment B of this validation report to qualify the results as appropriate according to the review of the data packages.

Two facts should be noted by all data users. First, **the "R" qualifier means that the laboratory-reported value is unusable.** In other words, due to significant quality control problems, the analysis is invalid and provides no information as to whether the analyte is present or not. Rejected values should not appear on data tables because they cannot be relied upon, even as a last resort. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** Strict quality control conformance serves only to increase confidence in reported results; any analytical result will always contain some error.

The data user is also cautioned that the validation effort is based on the raw data printouts as provided by the laboratory. Software manipulation cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

I. Holding Times, Preservation and Sample Integrity

The samples were collected September 19-20, 2001. All metals analyses were conducted well within acceptable holding times.

Field filtration of the samples for dissolved metals analysis and subsequent preservation of these samples with nitric acid and ice was documented by the sampling team on the three chain of custody (COC) records. An acceptable cooler temperature (5 °C) was also recorded on each of the COCs as well as on the laboratory's receiving logs. Acceptable sample pHs (<2) were recorded on all applicable receiving and preparation logs. Therefore, successful sample preservation in the field was confirmed.

According to the narrative in each data package, all samples were received intact and in good condition.

II. Calibrations

Sample analyses for all Trace ICP target elements were performed in two analysis series on 9/25/01 and 9/26/01. Mercury analyses were performed in a single CVAA series run on 9/27/01. A linearity check at the start of the CVAA series gave an acceptable correlation coefficient (>0.995). Initial and continuing calibration verification (ICV/CCV) standards were satisfactory for all metals reported from all three applicable analysis series (90-110% for all ICP target analytes and 85-115% for mercury).

Contract required detection limit (CRDL) standards were run at regular intervals throughout both ICP analysis series; all applicable analytes were at the required concentrations (2xCRDL). Recoveries were acceptable (80-120%) for all analytes in all CRDL standards except for lead in the first two standards on 9/25/01 (122% and 121%). Lead was not detected in any of the site samples run during this series; therefore, no sample results were qualified on this basis.

A CRDL standard was also run at the start of the analysis series for mercury, and an acceptable recovery was obtained for this quality control analysis.

III. Blanks

No metals calibration blanks had values above the CRDLs or less than the negative CRDLs for any target element. However, responses above the applicable instrument detection limits (IDLs) were found for various combinations of 13 different elements (aluminum, arsenic, barium, beryllium, cadmium, cobalt, iron, lead, magnesium, manganese, selenium, sodium, and vanadium) in each of the initial and continuing calibration blanks (ICB/CCBs); in addition, results for one or more of five elements (antimony, calcium, sodium, thallium, and zinc) that were below the negative IDLs were also reported in several of the ICB/CCBs. Results for samples analyzed within five runs of an

affected ICB/CCB warrant qualification if the sample result is less than five times the positive blank value or less than two times the absolute value of the negative blank value. The following sample results were qualified as less than the reported values (U) due to contamination in the associated calibration blanks:

- Cadmium and manganese in GW01CJ;
- Cobalt in GW02CJ, GW03CJ, GW04CJ, GW06CJ;
- Vanadium in GW08CJ.

The following sample results were qualified as estimated (J, UJ) based on negative responses in the associated calibration blanks:

- Zinc in all samples;
- Antimony in GW08DPCJ and GW09FBCJ; and
- Calcium and sodium in GW09FBCJ.

Sample results for all remaining elements for which positive or negative responses were found in the ICB/CCBs were not affected by the associated calibration blank values.

Two preparation blanks (PBWs) were prepared and analyzed with the samples in these SDGs. The PBW associated with SDG No. J1067 had responses for arsenic (-2.032 µg/L), calcium (-49.844 µg/L), and zinc (-3.269 µg/L). The PBW associated with SDG No. K1067 had responses for antimony (-3.109 µg/L), arsenic (-1.344 µg/L), calcium (-54.599 µg/L), cobalt (-5.594 µg/L), copper (-4.499 µg/L), magnesium (-42.543 µg/L), vanadium (-6.244 µg/L), and zinc (-3.855 µg/L). The following results were qualified as estimated (J, UJ) due to negative responses in the associated PBW:

- Antimony, cobalt, copper, and vanadium in PW01CJ, SW01CJ, SW01DPCJ, SW02CJ, and SW03CJ;
- Arsenic in GW01CJ, GW09FBCJ, PW01CJ, SW01CJ, SW01DPCJ, and SW03CJ;
- Calcium in GW09FBCJ;
- Zinc in all samples.

Some of the actions warranted based on PBW responses are redundant with actions taken based on CCB results; no additional action was taken in these cases. Sample results for all elements detected in the preparation blanks but not specifically listed above exceeded the action limits for qualification, therefore no action was warranted based on the preparation blank concentrations.

One field blank, GW09FBCJ, was prepared in association with the "GW" samples in SDG No. J1067. No target analytes were reported in this field-submitted blank.

IV. ICP Interference Check Sample

All interference check sample results were satisfactory (80-120 percent recovery).

V. Laboratory Control Sample

Two laboratory control samples (LCSs) were run for all ICP target analytes in association with the two SDGs that make up this data set. All laboratory control sample results for the ICP target analytes were satisfactory (80-120 percent recovery).

An LCS sample for mercury was identified but crossed out by the analyst on both applicable preparation logs. Analyses for these samples were found in the raw data, but one was crossed out and neither was reported. No explanation was provided by the laboratory, and without true values, recoveries could not be calculated by the validator. No further action was taken on this basis.

VI. Laboratory Duplicate Analysis

Duplicate analysis was performed on samples GW08CJ (SDG No. J1067) and SW01CJ (SDG No. K1067) for all target analytes. Relative percent differences (RPDs) between positive paired analytes in GW08CJ and its duplicate were acceptable (<20%) in all cases.

Positive results below the CRDL for thallium (5.0 µg/L) and vanadium (1.2 µg/L) were reported in the original analysis of GW08CJ but were not confirmed in the duplicate analysis (4.1 U and 0.60 U), respectively). The result for vanadium in GW08CJ was qualified based on calibration blank contamination (see Section III); therefore, no action was necessary based on the duplicate comparison. Thallium was also not detected in the field duplicate of GW08CJ (GW08DPCJ; see Section IX). Based on professional judgment, the result for thallium in GW08CJ was qualified as less than the CRDL (10.0 U) due to lack of confirmation in the laboratory duplicate analyses.

For SW01CJ and its duplicate, the RPD between the positive paired results for arsenic (58.6%) exceeded the acceptable limit (20 RPD). However, both measured concentrations were below the CRDL and met the alternate validation criterion of ±CRDL. Therefore, no qualifiers were applied by the validator on this basis.

A positive result below the CRDL for nickel (2.2 µg/L) was reported in the original analysis of SW01CJ but was not confirmed in the duplicate analysis (1.4 U). Based on professional judgment, the result for nickel in SW01CJ was qualified as less than the CRDL (40.0 U) due to lack of confirmation in the laboratory duplicate analyses.

VII. Matrix Spike Analysis

Matrix spike analysis was performed on samples GW08CJ and SW01CJ with acceptable recoveries (75-125%) for all target elements

VIII. ICP Serial Dilution

Serial dilution analysis was performed on samples GW08CJ and SW01CJ. Results for elements with initial (undiluted) results greater than 50xIDL were acceptable (less than 10 percent difference) except for potassium in both GW08CJ (18.7%) and SW01CJ (16.7%). Results for potassium in all samples except GW09FBCJ were qualified as estimated (J) based on these serial dilution results.

The "E" flags appropriately applied by the laboratory to all of the positive site sample results for potassium were removed by the validator.

IX. Field Duplicates

Sample GW08DPCJ was identified as a field duplicate of GW08CJ. Relative percent differences (RPDs) between positive paired results were acceptable (4-23%; QC <50%) with the exception of nickel (59%). Results for nickel in GW08CJ and GW08DPCJ were qualified as estimated (J) based on poor reproducibility in the field duplicate analyses. Cobalt and thallium were detected at concentrations below the CRDL in GW08CJ (2.9 µg/L and 5.0 µg/L, respectively) but were not confirmed in GW08DPCJ (0.70 U and 4.1 U, respectively). Thallium was also not detected in the laboratory duplicate analysis of this sample (see Section VI). Based on professional judgment, results for cobalt and thallium in GW08CJ were qualified as less than the CRDLs (50.0 U and 10.0 U, respectively) on this basis.

Sample SW01DPCJ was identified as a field duplicate of SW01CJ. RPDs between all positive paired results were acceptable (0.4-24%). A positive result below the CRDL for selenium (3.0 µg/L) was reported in SW01DPCJ but was not confirmed in SW01CJ (2.8 U). Based on professional judgment, the result for selenium in SW01DPCJ was qualified as less than the CRDL (5 U) due to the lack of field duplicate confirmation.

X. Sample Results Verification

Positive sample results were accurately reported from the raw data and IDLs established within three months prior to these sample analyses (on 7/16/01 for all ICP elements and for mercury) were appropriately reported for those elements that were not detected.

Elevated %RSDs (>20%) among the triplicate measurements taken for each element in each run were found for numerous elements reported at concentrations just slightly above the applicable IDLs. Many of these results were subsequently qualified as less than the reported values due to associated blank contamination or as less than the CRDL due to lack of laboratory or field duplicate confirmation; no additional action was necessary in these cases. Those sample results that were not so qualified were qualified by the validator as estimated (J) due to the high %RSDs; these values must be considered estimates based on the inconsistent responses obtained at the measured concentrations. The following results were qualified on this basis:

- Arsenic in GW08DPCJ (36.3%), PW01CJ (104%), SW01CJ (85.4%), SW01DPCJ (83.8%), SW02CJ (65.8%), and SW03CJ (144%);
- Chromium in GW02CJ (21.3%);
- Cobalt in GW07CJ (24.9%);
- Manganese in PW01CJ (25.5%);
- Nickel in GW08DPCJ (26.4%), GW05CJ (21.8%), GW01CJ (22.4%), PW01CJ (65.4%), and SW02CJ (38.2%); and
- Selenium in PW01CJ (123%) and SW03CJ (82.5%).

Positive sample results greater than the applicable IDLs but below the CRDLs were correctly reported by the laboratory with "B" qualifiers. As concentrations approach the IDL the accuracy of the measurement decreases; values closer to the CRDL, however, are probably quite accurate. Therefore, a guideline of 2xIDL was used to determine whether the reported results warranted qualification; specifically, sample results below the respective CRDL, less than 2xIDL and not otherwise qualified warrant qualification as estimated (J). Results for copper in GW03CJ and for nickel in GW07CJ were so qualified on this basis.

All "B" qualifiers applied by the laboratory were removed by the validator.

XI. Other QC

Total metals analyses were not performed on these samples.

XII. Documentation

All three applicable chain of custody (COC) records were present in both data packages and included all samples reported in these two SDGs. The following issues were noted:

- Improper corrections were observed on two of the three COC records. All corrections to these important legal documents must be made by drawing a single line through the incorrect entry, inserting the correct information, and initialing and dating the change. Obliterations and "write-overs" are not legally defensible.

- An entry by the laboratory stating "pH of all 7" was found on each of the COC records. This is not correct for all parameters, and is inconsistent with the pH information found on the laboratory's receiving logs. For the purposes of this validation, it was assumed that the receiving and preparation logs contained the correct pH values for the samples intended for dissolved metals analysis.

- Copies of courier airbills were not included in either data package to document the shipment portion of the sample transfers. Airbill numbers, however, were documented on both of the COC records.

- Although this approach is specified by the Quality Assurance Project Plan (QAPP), additional sample volumes provided to facilitate the laboratory's analysis of an MS/MSD pair should not be recorded on the COC as separate samples. Instead, a notation should be made indicating the sample for which extra volume has been provided, with the instruction that this sample be used for the MS/MSD analysis. MS/MSD analyses are laboratory-initiated quality control; if not for the logistical need to provide sufficient volume for the multiple analyses involved, MS/MSD pairs would never be mentioned on COC documentation.

These COC documentation issues do not directly affect the technical validity of the data generated for these samples, however some of them could be problematic if the data were to be used in litigation.

XIII. Overall Assessment

Based on the validation effort, dissolved metals results for samples in SDG Nos. J1067 and K1067 were qualified as follows:

- Results for cadmium and manganese in GW01CJ were qualified as less than the reported values (U) due to associated calibration blank contamination.

- Results for cobalt in GW02CJ, GW03CJ, GW04CJ, GW06CJ were qualified as less than the reported values (U) due to associated calibration blank contamination.

- The result for vanadium in GW08CJ was qualified as less than the reported value (U) due to associated calibration blank contamination.

- Results for zinc in all samples were qualified as estimated (J, UJ) due to negative responses in the associated calibration and preparation blanks.
- Results for antimony in GW08DPCJ and GW09FBCJ were qualified as estimated (UJ) due to negative responses in the associated calibration blanks.
- Results for calcium and sodium in GW09FBCJ were qualified as estimated (UJ) due to negative responses in the associated calibration blanks. The result for calcium was similarly qualified due to a negative response in the associated preparation blank.
- Results for antimony, cobalt, copper, and vanadium in PW01CJ, SW01CJ, SW01DPCJ, SW02CJ, and SW03CJ were qualified as estimated (J, UJ) due to negative responses in the associated preparation blank.
- Results for arsenic in GW01CJ and GW09FBCJ were qualified as estimated (J, UJ) due to negative responses in the associated preparation blank.
- Results for arsenic in PW01CJ, SW01CJ, SW01DPCJ, and SW03CJ were qualified as estimated (J, UJ) due to negative responses in the associated preparation blank and based on elevated %RSDs among the triplicate ICP measurements.
- The result for thallium in GW08CJ was qualified as less than the CRDL (10.0 U) due to lack of confirmation in the laboratory and field duplicate analyses and professional judgment.
- The result for nickel in SW01CJ was qualified as less than the CRDL (40.0 U) due to lack of confirmation in the laboratory duplicate analyses and professional judgment.
- Results for potassium in all samples except GW09FBCJ were qualified as estimated (J) based on unacceptable serial dilution results.
- Results for nickel in GW08CJ and GW08DPCJ were qualified as estimated (J) due to poor reproducibility in the field duplicate analyses. The result for nickel in GW08DPCJ was similarly qualified based on an elevated %RSD among the triplicate ICP measurements.
- The result for cobalt in GW08CJ was qualified as less than the CRDL (50 U) due to lack of confirmation in the field duplicate analyses and professional judgment.
- The result for selenium in SW01DPCJ was qualified as less than the CRDL (5.0 U) due to lack of confirmation in the field duplicate analyses and professional judgment.
- Results for arsenic in GW08DPCJ and SW02CJ were qualified as estimated (J) based on elevated %RSDs among the triplicate ICP measurements.

- The result for chromium in GW02CJ was qualified as estimated (J) based on an elevated %RSD among the triplicate ICP measurements.

- The result for cobalt in GW07CJ was qualified as estimated (J) based on an elevated %RSD among the triplicate ICP measurements.

- The result for manganese in PW01CJ was qualified as estimated (J) based on an elevated %RSD among the triplicate ICP measurements.

- Results for nickel in GW05CJ, GW01CJ, PW01CJ, and SW02CJ were qualified as estimated (J) based on elevated %RSDs among the triplicate ICP measurements.

- Results for selenium in PW01CJ and SW03CJ were qualified as estimated (J) based on elevated %RSDs among the triplicate ICP measurements.

- Results for copper in GW03CJ and for nickel in GW07CJ were qualified as estimated (J) because they were less than 2xIDL and were not otherwise qualified.

All "B" and "E" flags applied by the laboratory were removed by the validator.

Documentation issues observed in the data package are discussed in Section XII.

This validation report should be considered part of both data packages for all future distributions of the inorganics data.

TRILLIUM INC.

ATTACHMENT A

DATA TABLES
SDG Nos. J1067 and K1067
Dissolved Metals in Water

Marion Bragg Landfill - September 2001 - Dissolved Metals in Ground Water and Surface Water Samples

All Results are in ug/L

Collection Point ===>		MB-1	MB-1D	MB-2	MB-5	MB-6	MB-7	MB-8	MB-9
Sample ID ========>		GW08CJ	GW08DPCJ	GW07CJ	GW03CJ	GW04CJ	GW05CJ	GW06CJ	GW02CJ
Lab Sample No. ===>		J1067-8	J1067-9	J1067-7	J1067-3	J1067-4	J1067-5	J1067-6	J1067-2
Collection Date. ===>		9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/19/01
	CRDL								
Aluminum	200	43.6 U	43.6 U	43.6 U	90.0	43.6 U	43.6 U	43.6 U	43.6 U
Antimony	60	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Arsenic	10	6.2	7.8 J	99.9	19.4	150	52.8	125	8.0
Barium	200	209	201	592	417	435	630	245	68.8
Beryllium	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Cadmium	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Calcium	5000	127000	121000	137000	122000	136000	119000	92300	62000
Chromium	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.7 J
Cobalt	50	50.0 U	0.70 U	1.4 J	3.2 U	2.0 U	0.70 U	0.93 U	1.0 U
Copper	25	1.6 U	1.6 U	1.6 U	2.2 J	1.6 U	1.6 U	1.6 U	1.6 U
Iron	100	1730	1620	20500	6420	18500	7200	9240	2020
Lead	3	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	5000	33700	32500	31600	69700	35500	42200	72500	22100
Manganese	15	929	898	155	155	83.4	47.8	101	564
Mercury	0.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	40	3.5 J	1.9 J	2.6 J	6.4	12.6	2.3 J	3.4	3.2
Potassium	5000	2420 J	2510 J	12800 J	4090 J	11100 J	16900 J	22500 J	1330 J
Selenium	5	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
Silver	10	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	5000	14700	13700	23400	34400	21900	36400	76600	10600
Thallium	10	10.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	50	1.2 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Zinc	20	0.70 UJ	0.70 UJ	1.6 J	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ

Marion Bragg Landfill - September 2001 - Dissolved Metals in Ground Water and Surface Water Samples

All Results are in ug/L

Collection Point ===>		MB-10	Field Blank	PW-1	SW-1	SW-1D	SW-5	SW-6
Sample ID ========>		GW01CJ	GW09FBCJ	PW01CJ	SW01CJ	SW01DPCJ	SW02CJ	SW03CJ
Lab Sample No. ===>		J1067-1	J1067-10	K1067-6	K1067-1	K1067-2	K1067-3	K1067-7
Collection Date. ===>		9/19/01	9/20/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01
	CRDL							
Aluminum	200	43.6 U	43.6 U	43.6 U	43.6 U	43.6 U	43.6 U	43.6 U
Antimony	60	1.7 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ
Arsenic	10	1.2 UJ	1.2 UJ	1.7 J	2.7 J	2.2 J	3.5 J	1.8 J
Barium	200	98.9	0.20 U	14.6	73.3	74.6	57.5	56.1
Beryllium	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Cadmium	5	0.72 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Calcium	5000	123000	16.6 UJ	32700	80300	81000	72300	69400
Chromium	10	2.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cobalt	50	0.70 U	0.70 U	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ
Copper	25	1.6 U	1.6 U	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ
Iron	100	10.6 U	10.6 U	10.6 U	10.6 U	10.6 U	10.6 U	10.6 U
Lead	3	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	5000	38500	13.4 U	26400	24900	25000	21600	20800
Manganese	15	0.93 U	0.20 U	0.21 J	40.6	51.6	14.4	13.6
Mercury	0.2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	40	1.8 J	1.4 U	1.4 J	40.0 U	1.4 U	1.8 J	1.4 U
Potassium	5000	2540 J	36.2 U	5140 J	3730 J	3860 J	4390 J	4340 J
Selenium	5	2.8 U	2.8 U	3.4 J	2.8 U	5.0 U	2.8 U	3.0 J
Silver	10	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	5000	18000	334 UJ	16000	20500	20200	16600	16500
Thallium	10	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	50	0.60 U	0.60 U	0.60 UJ	0.60 UJ	0.60 UJ	0.60 UJ	0.60 UJ
Zinc	20	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ

TRILLIUM INC.

ATTACHMENT B

INORGANIC ANALYSIS DATA SHEETS (Form Is)
SDG Nos. J1067 and K1067
Dissolved Metals in Water

U.S. EPA-CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08CJ MB-1

CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-8

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	6.2	~~B~~		P
7440-39-3	Barium	209			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	127000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	50.0 ~~2.9~~	~~B~~	U	P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	1730			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	33700			P
7439-96-5	Manganese	929			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.5	~~B~~	J	P
7440-09-7	Potassium	2420	~~B~~	~~E~~ J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	14700			P
7440-28-0	Thallium	10.0 ~~5.0~~	~~B~~	U	P
7440-62-2	Vanadium	1.2	~~B~~	U	P
7440-66-6	Zinc	0.70	~~V~~	UJ	P

CAE 11/5/01

11/5/01 CAErikson

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08DPCJ
MB-1D

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-9

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	7.8	~~B~~	J	P
7440-39-3	Barium	201			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	121000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	U		P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	1620			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	32500			P
7439-96-5	Manganese	898			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.9	~~B~~	J	P
7440-09-7	Potassium	2510	~~B~~	~~B~~ J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	13700			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

CAE 11/5/01

CAE 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW07CJ MB-2

CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-7

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	99.9			P
7440-39-3	Barium	592			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	137000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	1.4	B	J	P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	20500			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	31600			P
7439-96-5	Manganese	155			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.6	B	J	P
7440-09-7	Potassium	12800		E J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	23400			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	1.6	B	J	P

CAE 11/5/01

CASuikson 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW03CJ MB-5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-3

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	90.0	~~B~~		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	19.4			P
7440-39-3	Barium	417			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	122000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.2	~~B~~	U	P
7440-50-8	Copper	2.2	~~B~~	J	P
7439-89-6	Iron	6420			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	69700			P
7439-96-5	Manganese	155			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	6.4	~~B~~		P
7440-09-7	Potassium	4090	~~B~~	EJ	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	34400			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	~~B~~	UJ	P

CAE 11/5/01

CAE 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW04CJ MB-6 CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-4

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	150			P
7440-39-3	Barium	435			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	136000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.0	~~B~~	U	P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	18500			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	35500			P
7439-96-5	Manganese	83.4			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	12.6	~~B~~		P
7440-09-7	Potassium	11100		~~B~~ J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	21900			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	~~B~~	UJ	P

CAE 11/5/01

CAE 11/5/01

CA Erickson 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW05CJ MB-7

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-5

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	52.8			P
7440-39-3	Barium	630			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	119000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	U		P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	7200			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	42200			P
7439-96-5	Manganese	47.8			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.3	B	J	P
7440-09-7	Potassium	16900		B J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	36400			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	B	UJ	P

CAE Jackson 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW06CJ MB-8

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-6

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	125			P
7440-39-3	Barium	245			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	92300			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.93	~~B~~	U	P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	9240			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	72500			P
7439-96-5	Manganese	101			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.4	~~B~~		P
7440-09-7	Potassium	22500		~~B~~ J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	76600			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	~~B~~	UJ	P

CAE 11/5/01

11/5/01 CAE Erikson

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW02CJ MB-9

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-2

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	8.0	B		P
7440-39-3	Barium	68.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	62000			P
7440-47-3	Chromium	2.7	B	J	P
7440-48-4	Cobalt	1.0	B	U	P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	2020			P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	22100			P
7439-96-5	Manganese	564			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	1330	B	EJ	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	10600			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	U	UJ	P

CAE 11/5/01

11/5/01 ASeukson

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW01CJ MB-10

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: J1067-1

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U		P
7440-38-2	Arsenic	1.2	U	UJ	P
7440-39-3	Barium	98.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.72	B	U	P
7440-70-2	Calcium	123000			P
7440-47-3	Chromium	2.5	B		P
7440-48-4	Cobalt	0.70	U		P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	38500			P
7439-96-5	Manganese	0.93	B	U	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.8	B	J	P
7440-09-7	Potassium	2540	B	EJ	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	18000			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	B	UJ	P

CAE 11/5/01

CA Erikson 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW08FBCJ
9

Lab Name: COMPUCHEM Contract:

Field Blank CAE 11/1/01

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-10

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	U	UJ	P
7440-38-2	Arsenic	1.2	U	UJ	P
7440-39-3	Barium	0.20	U		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	16.6	U	UJ	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	U		P
7440-50-8	Copper	1.6	U		P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	13.4	U		P
7439-96-5	Manganese	0.20	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	36.2	U	J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	334	U	UJ	P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	0.70	U	UJ	P

CAE 11/5/01

CAE Erikson 11/5/01

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA-CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

PW01CJ
PW-1
CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-6

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	1.7	~~B~~	J	P
7440-39-3	Barium	14.6	~~B~~		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	32700			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	~~U~~	UJ	P
7440-50-8	Copper	1.6	~~U~~	UJ	P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	26400			P
7439-96-5	Manganese	0.21	~~B~~	J	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.4	~~B~~	J	P
7440-09-7	Potassium	5140		~~B~~ J	P
7782-49-2	Selenium	3.4	~~B~~	J	P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	16000			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	~~U~~	UJ	P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

CAE 11/5/01

CA Erickson 11/5/01

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Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-1

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	2.7	~~B~~	J	P
7440-39-3	Barium	73.3	~~B~~		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	80300			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	~~U~~	UJ	P
7440-50-8	Copper	1.6	~~U~~	UJ	P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	24900			P
7439-96-5	Manganese	40.6			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	40.0 ~~2.2~~	~~B~~	U	P
7440-09-7	Potassium	3730	~~B~~	~~J~~ J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	20500			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	~~U~~	UJ	P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

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CAE 11/5/01

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW01DPCJ
SW-1D
CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-2

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	2.2	~~B~~	J	P
7440-39-3	Barium	74.6	~~B~~		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	81000			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	~~U~~	UJ	P
7440-50-8	Copper	1.6	~~U~~	UJ	P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	25000			P
7439-96-5	Manganese	51.6			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	3860	~~B~~	~~E~~ J	P
7782-49-2	Selenium	5.0 ~~3.0~~	~~B~~	U	P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	20200			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	~~U~~	UJ	P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

CAE 11/5/01

11/5/01 Erickson

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Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW02CJ
SW-5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067 CAE 11/1/01

Matrix (soil/water): WATER Lab Sample ID: K1067-3

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	3.5	~~B~~	J	P
7440-39-3	Barium	57.5	~~B~~		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	72300			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	~~U~~	UJ	P
7440-50-8	Copper	1.6	~~U~~	UJ	P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	21600			P
7439-96-5	Manganese	14.4	~~B~~		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.8	~~B~~	J	P
7440-09-7	Potassium	4390	~~B~~	~~B~~J	P
7782-49-2	Selenium	2.8	U		P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	16600			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	~~U~~	UJ	P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SW03CJ
SW-6
CAE 11/1/01

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-7

Level (low/med): LOW Date Received: 09/21/01

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	43.6	U		P
7440-36-0	Antimony	1.7	~~U~~	UJ	P
7440-38-2	Arsenic	1.8	~~B~~	J	P
7440-39-3	Barium	56.1	~~B~~		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	69400			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.70	~~U~~	UJ	P
7440-50-8	Copper	1.6	~~U~~	UJ	P
7439-89-6	Iron	10.6	U		P
7439-92-1	Lead	1.8	U		P
7439-95-4	Magnesium	20800			P
7439-96-5	Manganese	13.6	~~B~~		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	4340	~~B~~	EJ	P
7782-49-2	Selenium	3.0	~~B~~	J	P
7440-22-4	Silver	0.50	U		P
7440-23-5	Sodium	16500			P
7440-28-0	Thallium	4.1	U		P
7440-62-2	Vanadium	0.60	~~U~~	UJ	P
7440-66-6	Zinc	0.70	~~U~~	UJ	P

CAE 11/5/01

CA Erickson 11/5/01

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DATA VALIDATION

FOR

MARION BRAGG LANDFILL
MARION, INDIANA

INORGANIC ANALYSIS DATA
Total Suspended Solids,
Chloride, and Ammonia-Nitrogen in Water

CompuChem Case Nos. J1067 and K1067
September 2001 Sample Collections

Chemical Analyses Performed by:

CompuChem Environmental
Cary, North Carolina

FOR

O & M, Inc.
Danville, Indiana

BY

Trillium, Inc.
356 Farragut Crossing Drive
Knoxville, TN 37922
(865) 966-8880

November 5, 2001

92241/CAE/EKD
\MARION\Sept01\WetChem

EXECUTIVE SUMMARY

Validation of the wet chemistry analysis data (total suspended solids [TSS], ammonia-nitrogen [ammonia], and chloride) prepared by CompuChem Environmental for 14 water samples and one field blank from the Marion Bragg Landfill Site in Marion, Indiana, has been completed by Trillium, Inc. The data were issued by the laboratory in two separate data packages, under CompuChem Case Nos. J1067 and K1067, which were received for review on October 3, 2001. The following field samples were reported:

SDG No. J1067:

GW08CJ (MB-1)	GW08DPCJ (MB-1D)	GW07CJ (MB-2)
GW03CJ (MB-5)	GW04CJ (MB-6)	GW05CJ (MB-7)
GW06CJ (MB-8)	GW02CJ (MB-9)	GW01CJ (MB-10)
GW09FBCJ (Field Blank)		

SDG No. K1067:

PW01CJ (PW-1)	SW01CJ (SW-1)	SW01DPCJ (SW-1D)
SW02CJ (SW-5)	SW03CJ (SW-6)	

Sample GW09FBCJ was misidentified as GW08FBCJ by the laboratory throughout the data package for SDG No. J1067. The correct sample identification, consistent with the chain of custody entry, is listed above and is used throughout this validation report.

Based on the validation effort, the sample results were qualified or corrected as follows:

- Results for TSS in SW01CJ, SW01DPCJ, SW02CJ, SW03CJ, and PW01CJ were qualified as estimated (J).
- The result for TSS in GW06CJ was corrected to 115 mg/L (from 120 mg/L).
- The result for TSS in SW03CJ was corrected to 154 mg/L (from 1040 mg/L).
- The result for ammonia in GW07CJ was corrected to 11.7 mg/L (from 10.9 mg/L) and was rounded to reflect three significant figures.
- The positive results for ammonia in GW03CJ, GW04CJ, GW05CJ, GW06CJ, GW02CJ, SW01CJ, SW01DPCJ, and SW03CJ were rounded to reflect two significant figures.
- The RLs for ammonia, chloride, and TSS were adjusted to reflect two significant figures.

Brief explanations of the reasons for the actions taken above may be found in the Overall Assessment (Section X). Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

Documentation issues are discussed in Section IX.

This validation report should be considered part of both data packages for all future distributions of the wet chemistry data.

INTRODUCTION

Analyses for the requested parameters were performed by the laboratory according to the following analytical methods:

Ammonia - EPA 350.1
Chloride - EPA 325.2
Total Suspended Solids (TSS) - EPA 160.2

These methods are found in "Methods for Chemical Analysis of Water and Wastes," EPA 600/4-79/020, Rev. 3/83.

Since no validation guidelines specific to the analytical methods used are available, the validation was based on the requirements of the referenced procedures, the specifications of the project-specific Quality Assurance Project Plan (QAPP) and best professional judgment. The validation approach was similar to that described in USEPA's "National Functional Guidelines for Inorganic Data Review" (EPA-540/R-94/013, February 1994).

The data validation process is intended to evaluate data on a technical basis rather than a contract or method compliance basis. An initial assumption is that each data package contains sufficient raw data documentation to facilitate the validation process, comparable to the level of documentation required in a Contract Laboratory Program (CLP) data package.

During the validation process, laboratory data are verified against all available supporting documentation. Based on the findings of this review, qualifier codes may be added by the data validator. Validated results are, therefore, either qualified or unqualified. Unqualified results mean that the reported values may be used without reservation. Final validated results are annotated with the following codes in accordance with EPA's validation guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

R - The data are unusable. (Note: Analyte may or may not be present.)

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are recorded on the customized data tables in Attachment A and the Classical Chemistry Analyses Data Sheets (Form Is) in Attachment B to qualify the results as appropriate according to the review of the data packages.

Two facts should be noted by all data users. First, **the "R" qualifier means that the laboratory-reported value is unusable.** In other words, due to significant quality control problems, the analysis is invalid and provides no information as to whether the analyte is present or not. Rejected values should not appear on data tables because they cannot be relied upon, even as a last resort. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** Strict quality control conformance serves only to increase confidence in reported results; any analytical result will always contain some error.

The data user is also cautioned that the validation effort is based on the raw data printouts as provided by the laboratory. Software manipulation cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

I. Holding Times, Preservation and Sample Integrity

The samples were collected September 19-20, 2001. Analyses for all parameters were conducted within the holding times specified by the referenced methods and the QAPP (28 days from collection for chloride and ammonia; seven days from collection for TSS).

Preservation of the samples for ammonia analysis with sulfuric acid and ice and the samples for TSS and chloride analyses with ice was documented by the sampler on all three chain of custody (COC) records. Acceptable sample pHs for the ammonia sample containers were documented on the laboratory's receiving logs, confirming proper chemical preservation. An acceptable cooler temperature (5°C) on laboratory receipt was also documented on each of the COCs.

II. Calibrations

All samples were analyzed for chloride on 9/27/01 and a calibration curve incorporating a blank and six standards at concentrations ranging from 3 mg/L to 300 mg/L was documented for that date. The reported correlation coefficient (0.9985) for the quadratic equation describing the best-fit curve was acceptable (>0.995) but could not be reproduced exactly by the validator, likely due to the weighting factor used by the laboratory. No action was taken on this basis. Initial and continuing calibration verification standards (ICV/CCV) were run at appropriate frequencies during the chloride analysis series and showed acceptable (QC 85-115%) recoveries relative to reported true values (100-109%). However, since only final results are displayed in the raw data documentation (i.e., absorbance values are not provided), these results cannot be verified by the validator.

The samples were analyzed for ammonia on 9/25/01; a calibration curve incorporating a blank and seven standards at concentrations ranging from 0.1 mg/L to 8 mg/L was documented for this date. The reported correlation coefficient (0.9999) for the linear regression describing the best-fit curve was acceptable (>0.995) and was verified by the validator. ICV/CCV standards were run at appropriate frequencies during the ammonia analysis series and showed acceptable (QC 85-115%) recoveries relative to reported true values (104-107%). However, since only final results are displayed in the raw data documentation (i.e., absorbance values are not provided), these results cannot be verified by the validator.

Calibration is not applicable to the weight measurements used to determine TSS.

III. Blanks

No contamination was reported in any of the method blanks associated with the sample analyses; these results are supported by the raw data available in the data packages.

A field blank (GW09FBRA) was submitted for analysis with this set of site samples; no target analytes were detected above the applicable reporting limits (RLs) in the field blank.

IV. Laboratory Control Samples

Laboratory control samples prepared and analyzed with the samples for all three analysis parameters showed acceptable recoveries, ranging from 96.4-104%.

V. Laboratory Duplicate Analysis

Laboratory duplicate analyses were performed for TSS using GW08CJ and SW01CJ. Reproducibility was very good for GW08CJ, with a relative percent difference (RPD) of 0 percent (QAPP QC ≤25% RPD). Unacceptable variability was observed in the paired results for SW01CJ, with an RPD of 32.5%. Results for TSS in all surface water samples (SW01CJ, SW01DPCJ, SW02CJ, SW03CJ, and PW01CJ) were qualified as estimated (J) on this basis.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD analyses were performed on samples GW08CJ and SW01CJ for ammonia and chloride. Recoveries for ammonia (102-106%) and chloride (115-118%) were acceptable and showed excellent reproducibility, with RPDs ranging from 0.3 to 2.6% (QC 80-120% Recovery and ≤20 RPD) in both sets of quality control analyses.

VII. Field Duplicates

Samples GW08CJ and GW08DPCJ were identified as a field duplicate pair. Positive paired results showed good reproducibility (QAPP QC ≤25% RPD) for chloride (0.4 RPD) and TSS (23 RPD). Ammonia was not detected above the RL in either sample analysis, therefore no quantitative evaluation of precision could be made using these data.

Samples SW01CJ and SW01DPCJ were also identified as a field duplicate pair. Positive paired results showed very good reproducibility for ammonia (16 RPD), chloride (0.9 RPD), and TSS (15 RPD).

VIII. Sample Results Verification

With the exceptions noted below, results for TSS were correctly calculated and accurately reported for the samples in this data set based on review of the available raw data. The result for TSS in GW06CJ was corrected to 115 mg/L (from 120 mg/L) by the validator to accurately reflect the raw data; the wrong tare weight was subtracted from the gross weight by the laboratory. The result for TSS in SW03CJ was also corrected to 154 mg/L (from 1040 mg/L) by the validator to accurately reflect the raw data; the tare weight was *added* to the gross weight by the laboratory when it should have been *subtracted*. All previous discussions in this report were based on the corrected results.

With the exception noted below, ammonia and chloride results were correctly transcribed from the raw data; since only direct readings of the final results were documented, no verification of the reported concentrations could be made by the validator. The result for ammonia in GW07CJ was corrected to 11.7 mg/L (from 10.9 mg/L) to reflect the diluted analysis result based on the raw data; the undiluted analysis result exceeded the established calibration range.

Sample results and RLs were reported to inconsistent significant figures and are not in accordance with past CompuChem policy, which was defined as follows: *up to three significant figures are reported for positive sample results PROVIDED that no more decimal places than are found in the applicable RL (which is established to a certain number of significant figures and decimal places based on statistical evaluations performed when it is established) are reported,* or current CompuChem policy, which simply states that values greater than 10 are reported to three significant figures and values less than 10 are reported to two significant figures. For consistency with historical data generated in support of this project, all results greater than or equal to 10 mg/L were adjusted to reflect three significant figures and values less than 10 mg/L (including RLs) were adjusted to reflect two significant figures. Specifically, the following actions were taken:

- The positive results for ammonia in GW03CJ, GW04CJ, GW05CJ, GW06CJ, GW02CJ, SW01CJ, SW01DPCJ, and SW03CJ were rounded to reflect two significant figures because each value is less than 10 mg/L and was reported to four significant figures by the laboratory.

- The positive result for ammonia in GW07CJ was rounded to reflect three significant figures because this value is greater than 10 mg/L and was reported to four significant figures by the laboratory.

- The RLs for ammonia, chloride, and TSS were adjusted to reflect two significant figures (instead of four, three, and three, respectively, as reported by the laboratory).

The data tables in Attachment A list all individual sample analyte results, whether or not the value or qualifier was changed as a result of the validation effort.

IX. Documentation

Three chain of custody (COC) records were present in both data packages and included all reported samples. The following issues were noted:

- Improper corrections were observed on two of the three COC records. All corrections to these important legal documents must be made by drawing a single line through the incorrect entry, inserting the correct information, and initialing and dating the change. Obliterations and "write-overs" are not legally defensible.

- An entry by the laboratory stating "pH of all 7" was found on each of the COC records. This is not correct for all parameters, and is inconsistent with the pH information found on the laboratory's receiving logs. For the purposes of this validation, it was assumed that the receiving and preparation logs contained the correct pH values for the samples intended for wet chemistry analyses.

- Copies of courier airbills were not included in either data package to document the shipment portion of the sample transfers. Airbill numbers, however, were documented on both of the COC records.

- Although this approach is specified by the Quality Assurance Project Plan (QAPP), additional sample volumes provided to facilitate the laboratory's analysis of an MS/MSD pair should not be recorded on the COC as separate samples. Instead, a notation should be made indicating the sample for which extra volume has been provided, with the instruction that this sample be used for the MS/MSD analysis. MS/MSD analyses are laboratory-initiated quality control; if not for the logistical need to provide sufficient volume for the multiple analyses involved, MS/MSD pairs would never be mentioned on COC documentation.

These COC documentation issues do not directly affect the technical validity of the data generated for these samples, however some of them could be problematic if the data were to be used in litigation.

A copy of the validator-corrected raw data for TSS is included in Attachment C.

For ammonia and chloride, absorbance readings are provided for the IC standards but only direct readings of the final results were documented in the raw data for all runs performed during the sample analysis series. Therefore, no verification of the concentrations reported for these analyses could be made by the validator. At the discretion of the data user, the laboratory may be requested to provide this documentation in future data packages prepared in support of this project.

Measured analyte concentrations and/or percent recoveries for all three analysis parameters were corrected as necessary on the Quality Control (QC) Reports to accurately reflect rounded values and significant figures. For example, it is not correct to round the value 101.87 to 102 and then report the measured concentration as "102.0." In addition, reported percent recoveries and RPDs should always be reproducible from the measured concentrations as reported on the QC Reports. Copies of the corrected QC Reports are included in Attachment C.

Most of these documentation issues do not directly affect the technical validity of the data generated for these samples, however some of them could be problematic if the data were to be used in litigation.

X. Overall Assessment

Sample results for the three wet chemistry parameters were qualified or corrected as follows based on the validation effort:

- Results for TSS in SW01CJ, SW01DPCJ, SW02CJ, SW03CJ, and PW01CJ were qualified as estimated (J) due to poor reproducibility in the associated laboratory duplicate analysis.

- The result for TSS in GW06CJ was corrected to 115 mg/L (from 120 mg/L) by the validator to accurately reflect the raw data; the wrong tare weight was subtracted from the gross weight by the laboratory.

- The result for TSS in SW03CJ was corrected to 154 mg/L (from 1040 mg/L) by the validator to accurately reflect the raw data; the tare weight was *added* to the gross weight by the laboratory when it should have been *subtracted.*

- The result for ammonia in GW07CJ was corrected to 11.7 mg/L (from 10.9 mg/L) to accurately reflect the *diluted* analysis result; the undiluted analysis result exceeded the established calibration range.

- The positive results for ammonia in GW03CJ, GW04CJ, GW05CJ, GW06CJ, GW02CJ, SW01CJ, SW01DPCJ, and SW03CJ were rounded to reflect two significant figures because each value is less than 10 mg/L and was reported to four significant figures by the laboratory.

- The positive result for ammonia in GW07CJ was rounded to reflect three significant figures because this value is greater than 10 mg/L and was reported to four significant figures by the laboratory.

- The RLs for ammonia, chloride, and TSS were adjusted to reflect two significant figures (instead of four, three, and three, respectively, as reported by the laboratory).

Documentation issues are discussed in Section IX. At the discretion of the data user, the laboratory may be requested to provide the clarifications noted here to ensure that accurate and complete documentation is available for future reference.

This validation report should be considered part of both data packages for all future distributions of the wet chemistry data.

TRILLIUM INC.

ATTACHMENT A

DATA TABLES

Wet Chemistry - SDG Nos. J1067 and K1067
September 2001 Sample Collections - Marion Bragg Landfill

Marion Bragg Landfill - September 2001 - Wet Chemistry Parameters in GW and SW

Results are in mg/L

Collection Point ==========		MB-1	MB-1D	MB-2	MB-5	MB-6	MB-7	MB-8	MB-9
Sample ID ==========		GW08CJ	GW08DPCJ	GW07CJ	GW03CJ	GW04CJ	GW05CJ	GW06CJ	GW02CJ
Lab Sample No. ==========		J1067-8	J1067-9	J1067-7	J1067-3	J1067-4	J1067-5	J1067-6	J1067-2
Collection Date. ==========		9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/19/01
	RL								
Ammonia	0.10	0.10 U	0.10 U	11.7	1.9	4.3	7.2	4.3	0.53
Chloride	3.0	25.4	25.5	17.6	34.8	13.1	20.6	19.9	11.4
Total Suspended Solids	1.0	15.6	19.6	50.4	19.6	80.0	58.8	115	91.2

Marion Bragg Landfill - September 2001 - Wet Chemistry Parameters in GW and SW

Results are in mg/L

Collection Point	RL	MB-10	Field Blank	PW-1	SW-1	SW-1D	SW-5	SW-6
Sample ID		GW01CJ	GW09FBCJ	PW01CJ	SW01CJ	SW01DPCJ	SW02CJ	SW03CJ
Lab Sample No.		J1067-1	J1067-10	K1067-6	K1067-1	K1067-2	K1067-3	K1067-7
Collection Date.		9/19/01	9/20/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01
Ammonia	0.10	0.10 U	0.10 U	0.10 U	0.20	0.17	0.10 U	0.13
Chloride	3.0	27.0	3.0 U	15.9	33.2	32.9	27.5	27.0
Total Suspended Solids	1.0	86.0	1.0 U	19.2 J	64.4 J	55.2 J	144 J	154 J

TRILLIUM INC.

ATTACHMENT B

CLASSICAL CHEMISTRY ANALYSES DATA SHEETS (FORM Is)

Wet Chemistry - SDG Nos. J1067 and K1067
September 2001 Sample Collections - Marion Bragg Landfill

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW08CJ
MB-1

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

CAE 11/2/01

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-8

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Ammonia	0.10 ~~0.1000~~	U			9/25/01
TSS	15.6				9/24/01
Chloride	25.4				9/27/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW08DPCJ MB-1D

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-9

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	25.5				9/27/01
TSS	19.6				9/24/01
Ammonia	0.10 ~~0.1000~~	U			9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW07CJ MB-2

ab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

CAE 11/2/01

DG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-7

ate Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	17.6				9/27/01
TSS	50.4				9/24/01
Ammonia	11.7 ~~10.94~~				9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW03CJ MB-5

CAE 11/2/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-3

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	34.8				9/27/01
TSS	19.6				9/24/01
Ammonia	1.9 ~~1.925~~				9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW04CJ MB-6

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-4

Date Received: 9/21/01 % Solids: 0.00

CAE 11/2/01

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	13.1				9/27/01
TSS	80.0				9/24/01
Ammonia	4.3 ~~4.299~~				9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW05CJ MB-7

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

CAE 11/7/01

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-5

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	20.6				9/27/01
TSS	58.8				9/24/01
Ammonia	7.2 ~~7.152~~				9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW06CJ MB-8

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-6

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	19.9				9/27/01
TSS	115 ~~120~~				9/24/01
Ammonia	4.3 ~~4.296~~				9/25/01

CAE 11/2/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW02CJ MB-9 CAE 11/5/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-2

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	11.4				9/27/01
TSS	91.2				9/24/01
Ammonia	0.63 ~~0.5270~~				9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW01CJ MB-10

ab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.: CAE 11/7/01

DG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-1

ate Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	27.0				9/27/01
TSS	86.0				9/24/01
Ammonia	0.10 ~~0.1000~~	U			9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

GW08FBCJ
Field Blank

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

Matrix (soil/water): WATER Lab Sample ID: J1067-10

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	3.0 ~~3.00~~	U			9/27/01
TSS	1.0 ~~1.00~~	U			9/24/01
Ammonia	0.10 ~~0.1000~~	U			9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

PW01CJ

PW-1

CAE 11/2/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-6

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	15.9				9/27/01
TSS	19.2	J			9/24/01
Ammonia	0.10 ~~0.1000~~	U			9/25/01

CAE 11/5/01

Comments:

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

SW01CJ
SW-1
CAE 11/5/01

Lab Name: CompuChem Contract: _____

Lab Code: LIBRTY Case No.: _____ NRAS No.: _____

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-1

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	33.2				9/27/01
Ammonia	0.20 ~~0.1960~~				9/25/01
TSS	64.4	J			9/24/01

CAE 11/5/01

Comments: _____

3

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

SW01DPCJ
SW-1D
CAE 11/2/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-2

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	32.9				9/27/01
TSS	55.2	J			9/24/01
Ammonia	0.17 ~~0.1720~~				9/25/01

CAE 11/5/01

Comments:

4

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

SW02CJ
SW-5
CAE 11/7/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-3

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	27.5				9/27/01
TSS	144	J			9/24/01
Ammonia	0.10 ~~0.1000~~	U			9/25/01

CAE 11/5/01

Comments:

5

SW-846

1-CC

CLASSICAL CHEMISTRY ANALYSES DATA SHEET

EPA SAMPLE NO.

SW03CJ
SW-6
CAE 11/2/01

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: K1067-7

Date Received: 9/21/01 % Solids: 0.00

Concentration Units (mg/L or mg/kg dry weight): mg/L

PARAMETER	CONCENTRATION	C	Q	M	DATE ANALYZED
Chloride	27.0				9/27/01
TSS	154 ~~1040~~	J			9/24/01
Ammonia	0.13 ~~0.1320~~				9/25/01

CAE 11/5/01

Comments:

6

TRILLIUM INC.

ATTACHMENT C

CORRECTED TSS RAW DATA
CORRECTED QUALITY CONTROL REPORTS

Wet Chemistry - SDG Nos. J1067 and K1067
September 2001 Sample Collections - Marion Bragg Landfill

Residue Determination Log

Filterable Residue (TDS) EPA 160.1
Non-Filterable Residue (TSS) EPA 160.2

Total Residue EPA 160.3

Case/SDG: X2157/J1067/K1067

Oven Temp: In: /Out:
TDS:
TSS: 103°
TS:

Analyst: J. Smith Date: 9/24/01

Dish #	CompuChem ID	Client ID	Dish Tare (g)	Gross Weight Dish + Residue (g) init:final wt.	Net Residue (g)	Sample Volume (ml)	Concentration to Report (mg/L)	Comment
112	LCSW WG13053-4	QC:	0.1100	0.1145	0.0045	100	45 ✓	96.36% of R
111	PBW WG13053-5	Blank	0.1112	0.1112	0	100	0	
110	X1157-13	D03584	0.1057	0.1101	0.0014	250	5.6	
109	J1067-8	GW08CJ	0.1094	0.1133	0.0039	250	15.6 ✓	
108	WG13053-3 J1067-8 Dup	GW08CJ-Dup	0.1127	0.1166	0.0039	250	15.6 ✓	
107	J1067-1	GW01CJ	0.1096	0.1311	0.0215	250	86.0 ✓	
106	-2	GW02CJ	0.1118	0.1346	0.0228	250	91.2 ✓	
105	-3	GW03CJ	0.1117	0.1166	0.0049	250	19.6	
104	-4	GW04CJ	0.1142	0.1342	0.0200	250	80.0 ✓	
103	-5	GW05CJ	0.1130	0.1277	0.0147	250	58.8 ✓	
102	-6	GW06CJ	0.1105	0.1392	~~0.0301~~ 0.0287	250	~~120.4~~ 114.8	CCE 11/2/01
101	-7	GW07CJ	0.1091	0.1217	0.0126	250	50.4 ✓	
100	-9	GW08DPCJ	0.1085	0.1134	0.0049	250	19.6 ✓	
99	-10	GW08FBCJ	0.1102	0.1102	0	250	0 ✓	
98	K1067-1	SW01CJ	0.1128	0.1289	0.0161	250	64.4 ✓	
97	K1067-1 Dup	SW01CJ-Dup	0.1121	~~0.117~~ 0.1237	0.0116	250	46.4 ✓	
~~9969~~ 96	K1067-2	SW02DPCJ	~~0.1112~~	0.1260	0.0138	250	55.2 ✓	
1924	K1067-3		0.1112	0.1473	0.0361	250	144.4 ✓	
9927	K1067-6	PW01CJ	0.1124	0.1172	0.0048	250	19.2 ✓	
9926	K1067-7	SW03CJ	0.1127	0.1513	0.0386 ~~0.064~~	250	154.4 ~~103~~	
							Verified 11/2/01	JP 9/24/01

Calculation: mg/L total dissolved solids = gross weight - tare weight (mg) / sample volume (L)
mg/L total suspended solids = gross weight – tare weight (mg) / sample volume (L)

LCS Acceptance Range= ± 10%
LCS + 15% TV = 46.7 mg/L

Comments:

Reviewed By: Date: 9-25-01

527

SW-846

5A-CC

MATRIX SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

GW08CJS

Lab Name: CompuChem Contract:

ab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

atrix (soil/water): WATER Lab Sample ID: WG13053-1

Concentration Units (mg/L or mg/kg dry weight MG/L

PARAMETER	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Chloride	75 - 125	95.3		25.4		60.00	116.5	✓	
Ammonia	75 - 125	2.05		0.10 ~~0.05~~	U	2.00	~~100.0~~ 102.5		

CAE 11/7/01

Comments:

SW-846

5A-CC

MATRIX SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

GW08CJSD

Lab Name: CompuChem Contract:

ab Code: LIBRTY Case No.: NRAS No.:

SDG No.: J1067

atrix (soil/water): WATER Lab Sample ID: WG13053-2

Concentration Units (mg/L or mg/kg dry weight MG/L

PARAMETER	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Chloride	75 - 125	95.6		25.4		60.00	117.0	✓	
Ammonia	75 - 125	2.10		0.10 ~~0.05~~	U	2.00	~~102.5~~ 105.0		

CAE 11/7/01

Comments:

SW-846

5A-CC

MATRIX SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SW01CJS

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: WG13054-1

Concentration Units (mg/L or mg/kg dry weight MG/L

PARAMETER	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Chloride	75 - 125	104 ~~104.0~~		33.2		60.00	118.0		
Ammonia	75 - 125	2.26		0.20		2.00	103.0		

CAE 11/2/01

Comments:

8

SW-846

5A-CC

MATRIX SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

SW01CJSD

Lab Name: CompuChem Contract:

Lab Code: LIBRTY Case No.: NRAS No.:

SDG No.: K1067

Matrix (soil/water): WATER Lab Sample ID: WG13054-2

Concentration Units (mg/L or mg/kg dry weight MG/L

PARAMETER	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Chloride	75 - 125	102 ~~102.0~~		33.2		60.00	114.7	✓	
Ammonia	75 - 125	2.32		0.20	✓	2.00	106.0	✓	

CAE 11/14/01

Comments:

9

TRILLIUM INC.

DATA VALIDATION

FOR

MARION BRAGG LANDFILL
MARION, INDIANA

WET CHEMISTRY ANALYSIS DATA
Chemical Oxygen Demand (COD) in Water

Laboratory Project Number 253805
September 2001 Sample Collections

Chemical Analyses Performed by:

TestAmerica, Inc.
Nashville, Tennessee

FOR

O & M, Inc.
Danville, Indiana

BY

Trillium, Inc.
356 Farragut Crossing Drive
Knoxville, TN 37922
(865) 966-8880

November 5, 2001

92241/CAE/ESC
\MARION\Sept01\cod

TRILLIUM INC.

EXECUTIVE SUMMARY

Validation of the wet chemistry analysis data (chemical oxygen demand [COD]) prepared by TestAmerica, Inc., under subcontract to CompuChem Environmental, for 14 water samples and one field blank from the Marion Bragg Landfill Site in Marion, Indiana, has been completed by Trillium, Inc. The data were reported by the laboratory in a single data package identified as Laboratory Project Number 253805, which was received for review on October 9, 2001. The following field samples were reported:

GW08CJ (MB-1)	GW08DPCJ (MB-1D)	GW07CJ (MB-2)
GW03CJ (MB-5)	GW04CJ (MB-6)	GW05CJ (MB-7)
GW06CJ (MB-8)	GW02CJ (MB-9)	GW01CJ (MB-10)
GW09FBCJ (Field Blank)	PW01CJ (PW-1)	SW01CJ (SW-1)
SW01DPCJ (SW-1D)	SW02CJ (SW-5)	SW03CJ (SW-6)

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for COD in GW07CJ, GW05CJ, and GW02CJ were qualified as less than the reported values (U).
- Positive results less than 10 mg/L and the reporting limit (RL) were adjusted to reflect two significant figures.

Brief explanations of the reasons for the actions taken above may be found in the Overall Assessment (Section IX). Details of the validation findings and conclusions based on review of the results for each quality control requirement are provided in the remaining sections of this report.

Documentation issues are discussed in Section VIII.

This validation report should be considered part of the data package for all future distributions of the COD data.

INTRODUCTION

Analyses were performed according to EPA's "Chemical Analysis of Water and Wastes" (EPA-600/4-79-020), March 1983, Method 410.4, modified for HACH Method 8000. Since no guidelines specific to the analytical method used are available, the validation was based on the requirements of the referenced procedure, the specifications of the project-specific Quality Assurance Project Plan (QAPP), and best professional judgment. The validation approach was similar to that described in EPA's "National Functional Guidelines for Inorganic Data Review" (EPA-540/R-94/013, February 1994). Results of sample analyses were reported by the laboratory without qualifications.

The data validation process is intended to evaluate data on a technical basis rather than a contract or method compliance basis. An initial assumption is that the data package contains sufficient raw data documentation to facilitate the validation process, comparable to the level of documentation required in a Contract Laboratory Program (CLP) data package.

During the validation process, laboratory data are verified against all available supporting documentation. Based on this review, qualifier codes may be added by the data validator. Validated results are, therefore, either qualified or unqualified. Unqualified results mean that the reported values may be used without reservation. Final validated results are annotated with the following codes in accordance with EPA's National Functional Guidelines:

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

R - The data are unusable. (Note: The analyte may or may not be present.)

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

These codes are recorded on the client-customized data tables (Attachment A) and the laboratory's Analytical Reports (Attachment B) to qualify the results as appropriate according to the review of the data package.

Two facts should be noted by all data users. First, **the "R" qualifier means that the laboratory-reported value is unusable.** In other words, due to significant quality control problems, the analysis is invalid and provides no information as to whether the analyte is present or not. Rejected values should not appear on data tables because they cannot be relied upon, even as a last

resort. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** Strict quality control conformance serves only to increase confidence in reported results; any analytical result will always contain some error.

The data user is also cautioned that the validation effort is based on the raw data printouts as provided by the laboratory. Software manipulation cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

I. Holding Times, Preservation and Sample Integrity

The water samples were collected on September 19-20, 2001. All COD analyses were conducted well within the 28-day holding time specified by both the referenced method and the QAPP.

The cooler temperature on receipt of the samples at TestAmerica, Inc.-Nashville was not recorded on either of the two chain of custody (COC) records documenting the shipment of samples from CompuChem to TestAmerica. Sample preservation with sulfuric acid and ice was noted by CompuChem on the COCs. Notations indicating an acceptable cooler temperature of 2°C and "correct preservatives used" were found on the TestAmerica-Nashville Cooler Receipt Form included in the data package, but no documentation of sample pHs was found anywhere in the data package. Since successful acidification of the COD sample containers was documented on the receiving logs in CompuChem's data packages, no action was taken on this basis. For the purposes of this evaluation, it was assumed that all of these samples were appropriately preserved during transfer between the laboratories.

The TestAmerica-Nashville Cooler Receipt Form also indicated that the cooler was received with an intact custody seal on the outside and that all sample containers arrived in good condition.

II. Calibrations

The reported COD analyses were performed on 9/27/01 and 9/28/01. An initial calibration (IC) curve was run at the start of the analysis series on each date and included five standard concentrations (3 mg/L, 10 mg/L, 30 mg/L, 50 mg/L, and 100 mg/L). Acceptable correlation coefficients (>0.995) were reported by the laboratory and verified by the validator for both ICs.

Initial and continuing calibration verification (ICV/CCV) standards were run at appropriate frequencies throughout both COD analysis series; acceptable recoveries (QC 85-115%) were obtained in all cases (94.8-105%).

III. Blanks

Initial and continuing calibration blanks (ICB/CCBs) were run at appropriate frequencies throughout both analysis series; no COD was detected above the reporting limit (RL) in any of these blanks.

One field blank, GW09FBCJ, was submitted with this sample set. COD was detected at 7.0 mg/L in the field blank. Results for COD in GW07CJ, GW05CJ, and GW02CJ, which are less than five times the concentration in the field blank, were qualified as less than the reported values (U) on this basis.

Due to differences in collection methods, GW09FBCJ is not associated with the "SW" and "PW" samples. Therefore, no further action was warranted on this basis.

IV. Laboratory Control Samples (LCS)

Acceptable LCS recoveries (true values 50 mg/L and 20 mg/L) were obtained in association with both analysis series applicable to this data set (92.8-104%).

V. Laboratory and Field Duplicate Analyses

A. Laboratory Duplicates

Samples GW03CJ and SW03CJ were run in duplicate by the laboratory. Excellent reproducibility was demonstrated between both sets of paired results, with relative percent differences (RPDs) of 3.5% and 5.7%, respectively.

Duplicate results were also reported for a non-project sample in association with these sample analyses. These results have no relevance to the Marion Bragg site samples, and were not further considered as part of the validation effort.

B. Field Duplicates

Sample GW08DPCJ was identified as a field duplicate of GW08CJ. COD was not detected above the RL (3.0 U) in either sample analysis, therefore no quantitative evaluation of precision could be made using these data.

Sample SW01DPCJ was identified as a field duplicate of SW01CJ. Positive paired results for COD showed excellent reproducibility (RPD 5.9%; QC ≤25%).

VI. Matrix Spike Analysis

Samples GW08DPCJ and SW01CJ were prepared and analyzed as matrix spike/matrix spike duplicate (MS/MSD) pairs by the laboratory. Acceptable recoveries (98.2-105%) were reported for both sets of MS/MSD samples. Excellent reproducibility was also demonstrated, with RPDs of 0.6% and 0%, respectively.

MS/MSD results were also reported for a non-project sample in association with these sample analyses. These results have no relevance to the Marion Bragg site samples, and were not further considered as part of the validation effort.

VII. Sample Results Verification

Results reported for COD were correctly calculated and accurately reported by the laboratory.

The reporting limit specified by the laboratory for all non-detected results is equivalent to the concentration of the lowest initial calibration standard analyzed in association with these analyses, and is therefore well supported by the raw data.

For consistency with historical data generated in support of this project, positive sample results less than 10 mg/L (including the RL) were adjusted to reflect two significant figures. Sample results greater than 10 mg/L were correctly reported to three significant figures, therefore no further action was warranted. The laboratory should be requested to follow these reporting conventions for all future sampling and analysis events.

The data tables in Attachment A list all individual sample analyte results, whether or not the value or qualifier was affected by the findings of the validation effort.

VIII. Documentation

Field-initiated chain of custody (COC) records were not included in the COD data package, but were available in the CompuChem data packages for the other analysis parameters run on these samples. COC records documenting transfer of the samples from CompuChem to TestAmerica, Inc. were present; all samples reported in this data set were listed on these forms. The following issues were noted:

- No cooler temperature or sample pH information was documented by TestAmerica, Inc., on receipt of the samples. Although this information was available elsewhere, it should always be documented directly on the applicable COC records.

- No overnight courier airbill numbers were documented, nor were copies of the courier airbills included in the data package to document transfer of the samples between laboratories.

- The dates recorded with the first "Received by" and the second "Relinquished by" signatures (documenting a local transfer to TestAmerica, Inc., from CompuChem and subsequent shipment of the samples within the TestAmerica network) are incomplete; no year is included.

The sample identification recorded by CompuChem on the interlaboratory COC as "SW-01CJ" is incorrect. The correct identification for this sample, based on the field COC record, is "SW01CJ." This identification was corrected on the laboratory's Analytical Report for this sample by the validator.

TestAmerica, Inc., incorrectly reported the project name as "Marion Braggy" on all of the analytical reports. The correct project name is "Marion Bragg." This correction was made by the validator to the analytical reports in Attachment B.

TestAmerica, Inc., incorrectly identified the sample type as "ground water" for SW01CJ, SW01DPCJ, SW02CJ, SW03CJ, and PW01CJ. These are surface water samples; this entry was corrected by the validator on the analytical reports for these samples in Attachment B.

These COC and documentation issues do not directly affect the technical validity of the analytical data generated; they could, however, be problematic if they were to be used in litigation.

IX. Overall Assessment

Based on the validation effort, sample results for COD in the September 2001 water samples from the Marion Bragg site were qualified as follows:

- Results for COD in GW07CJ, GW05CJ, and GW02CJ were qualified as less than the reported values (U) based on contamination in the associated field blank.
- Positive results less than 10 mg/L and the RL were adjusted to reflect two significant figures to achieve overall consistency with historical data generated in support of this project.

Documentation issues are discussed in Section VIII.

This validation report should be considered part of the data package for all future distributions of the COD data.

TRILLIUM INC.

ATTACHMENT A

DATA TABLES
COD in Water
September 2001 Sample Collections - Marion Bragg Landfill
Laboratory Project Number 253805

Marion Bragg Landfill - September 2001 - Chemical Oxygen Demand in Ground Water

Results are in mg/L

Collection Point ===>		MB-1	MB-1D	MB-2	MB-5	MB-6	MB-7	MB-8	MB-9
Sample ID ========>		GW08CJ	GW08DPCJ	GW07CJ	GW03CJ	GW04CJ	GW05CJ	GW06CJ	GW02CJ
Lab Sample No. ===>		133652	133653	133651	133647	133648	133649	1133650	133646
Collection Date. ===>		9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/20/01	9/19/01
	RL								
COD	3.0	3.0 U	3.0 U	27.5 U	40.2	37.3	33.7 U	94.2	11.3 U

Marion Bragg Landfill - September 2001 - Chemical Oxygen Demand in Ground Water

Results are in mg/L

Collection Point ===>		MB-10	Field Blank	PW-1	SW-1	SW-1D	SW-5	SW-6
Sample ID ========>		GW01CJ	GW09FBCJ	PW01CJ	SW01CJ	SW01DPCJ	SW02CJ	SW03CJ
Lab Sample No. ===>		133645	133654	133659	133655	133656	133657	133658
Collection Date. ===>		9/19/01	9/20/01	9/19/01	9/19/01	9/19/01	9/19/01	9/19/01
	RL							
COD	3.0	3.0 U	7.0	22.2	22.9	24.3	44.2	42.9

TRILLIUM INC.

ATTACHMENT B

ANALYTICAL REPORTS
COD in Water
September 2001 Sample Collections - Marion Bragg Landfill
Laboratory Project Number 253805

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133652
Sample ID: GW08CJ MB-1 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 12:00
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	ND	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director
Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133653
Sample ID: GW08DPCJ MB-1D
Sample Type: Ground water CAE 11/5/01
Site ID:

Date Collected: 9/20/01
Time Collected: 12:00
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	ND	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler:

CAE 11/5/01

Lab Number: 01-A133651
Sample ID: GW07CJ MB-2 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 10:45
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY										
Chemical Oxygen Demand	27.5 U CAE 11/5/01	mg/l	~~3.00~~ 3.0 CAE 11/5/01	~~3.00~~ 3.0	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

ND - Not detected at the report limit.
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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133647
Sample ID: GW03CJ MB-5 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 8:15
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	40.2	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

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M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler:
CAE 11/5/01

Lab Number: 01-A133648
Sample ID: GW04CJ MB-6 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 9:00
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	37.3	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8359

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler:

CAE 11/5/01

Lab Number: 01-A133649
Sample ID: GW05CJ MB-7 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 9:30
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	33.7 U	mg/l	~~3.00~~	~~5.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01 CAE 11/5/01

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- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

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Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler:
CAE 11/5/01

Lab Number: 01-A133650
Sample ID: GW06CJ MB-8 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/20/01
Time Collected: 10:15
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY										
Chemical Oxygen Demand	94.2	mg/l	~~3.00~~ 3.0	~~3.00~~ 3.0	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGGY
Sampler: CAE 11/5/01

Lab Number: 01-A133646
Sample ID: GW02CJ MB-9 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/19/01
Time Collected: 17:30
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	11.3 U	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358
	CAE 11/5/01			CAE 11/5/01						

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: [signature] Report Date: 10/ 2/01

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133645
Sample ID: GW01CJ MB-10 CAE 11/5/01
Sample Type: Ground water
Site ID:

Date Collected: 9/19/01
Time Collected: 16:38
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	ND	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: Gail A. Lage Report Date: 10/ 2/01

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133654
Sample ID: GW09FBCJ Field Blank
Sample Type: Ground water CAE 11/5/01
Site ID:

Date Collected: 9/20/01
Time Collected: 13:30
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY	7.0		3.0	3.0						
Chemical Oxygen Demand	~~7.00~~	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

Ca Erikson 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133659
Sample ID: PW01CJ PW-1
Sample Type: ~~Ground~~ water
Site ID: Surface CAE 11/5/01

Date Collected: 9/19/01
Time Collected: 14:45
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	22.2	mg/l	~~3.00~~	~~3.00~~	1	9/28/01	13:50	S. Overton	410.4 Mod	8359

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

Paul E. Lane, Jr., Lab Director
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Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGGY
Sampler: CAE 11/5/01

Lab Number: 01-A133655
Sample ID: ~~SW-01CJ~~ SW01CJ, SW-1
Sample Type: ~~Ground~~ water
Site ID: surface CAE 11/5/01

Date Collected: 9/19/01
Time Collected: 14:00
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			30	3.0						
Chemical Oxygen Demand	22.9	mg/l	~~3.00~~	~~3.00~~	1	9/28/01	13:50	S. Overton	410.4 Mod	8359

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGGY
Sampler: CAE 11/5/01

Lab Number: 01-A133656
Sample ID: SW01DPCJ SW-LD
Sample Type: ~~Ground~~ water
Site ID: Surface CAE 11/5/01

Date Collected: 9/19/01
Time Collected: 14:00
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	24.3	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133657
Sample ID: SW02CJ SW-5
Sample Type: ~~Ground~~ water
Site ID: Surface CAE 11/5/01

Date Collected: 9/19/01
Time Collected: 15:30
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	44.2	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

COMPUCHEM 2303
DIANE BYRD
501 MADISON AVENUE
CARY, NC 27513

Project:
Project Name: MARION BRAGG
Sampler: CAE 11/5/01

Lab Number: 01-A133658
Sample ID: SW03CJ SW-6
Sample Type: ~~Ground~~ water
Site ID: Surface CAE 11/5/01

Date Collected: 9/19/01
Time Collected: 15:40
Date Received: 9/22/01
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
MISCELLANEOUS CHEMISTRY			3.0	3.0						
Chemical Oxygen Demand	42.9	mg/l	~~3.00~~	~~3.00~~	1	9/27/01	15:09	S. Overton	410.4 Mod	8358

CAE 11/5/01

ND - Not detected at the report limit.
- Recovery outside Laboratory historical or method prescribed limits.
M - COD method modified for HACH Method 8000.

Report Approved By: _____ Report Date: 10/ 2/01

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Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 387

End of Sample Report.